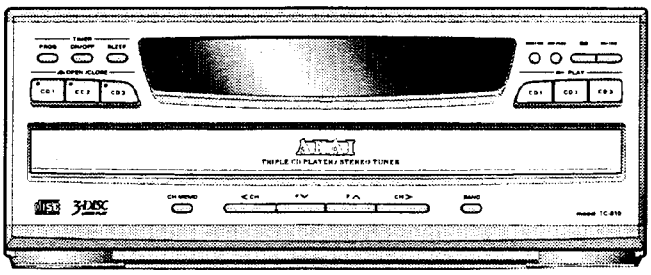
AKAI SERVICE MANUAL



COMPACT disc DIGITAL AUDIO

MINI STEREO COMPONENT SYSTEM

TUNER · CD PLAYER

TC-810/813R

CONTENTS

[TC-810/813R]

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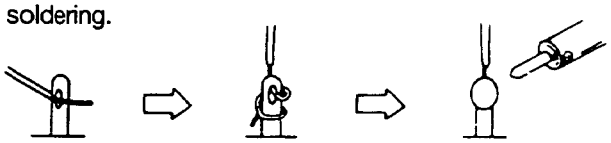
SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

1. Parts indentified by the ⚠ (*)symbol parts are critical for safety. Replace them only with parts whose numbers are specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.
   These must also be replaced only with specified replacements.
   Examples:RF converters, tuner units, antenna selection switches, RF cables, noise-blocking capacitors, noise-blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulating Tape
   2) PVC tubing
   3) Spacers(insulating barriers)
   4) Insulating sheets for transistors
   5) Plastic screws for fixing micro switches
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Make sure that wires do not contact heat generating parts (heat sinks, oxide metal film resistors, fusible resistors, etc.).
7. Check if replaced wires do not contact sharply edged or pointed parts.
8. Also check areas surrounding repaired parts.
9. Make sure that foreign objects (screws, solder droplets, etc,) do not remain inside the set.

MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can. Please leave them at an appropriate depot. All other household batteries can be thrown out with the household waste.

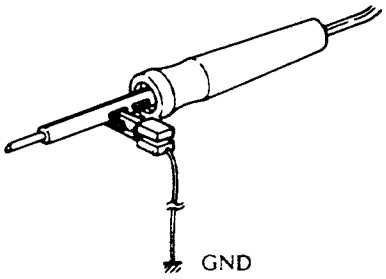
SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to check if exposed parts are acceptably insulated from the supply circuit.
The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resister of 1500 ohms paralleled with a 0.15μF capacitor, under the unit's normal working condition.
The leakage-current should be less than 0.5mA r ms AC.
Thè resistance measurement should be done between accesible exposed metal parts and power cord plug prongs with the power switch "ON"(if included). The resistance should be more than 2.2Mohms.

PRECAUTIONS IN REPAIRING

When repairing or adjusting the unit, please note the following points.

1. Do not put excessive pressure on the mechanical part (operation part), including the pick-up block, as extremely high mechanical precision is required in these parts.
2. When the base is removed for repair or adjustment, make sure that there are no metal objects between the P.C board or the mecha parts and the base.
3. The Micro-Computer and the CD signal processing ICs may be damaged by static electricity or leakage from a soldering iron during repairing. While soldering, please take the precautions against leakage as in the illustration.

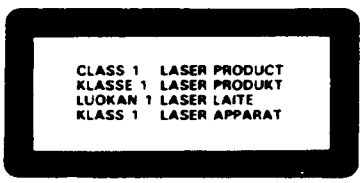


4. Do not loosen any screws in the pick-up block.
   Please refer to NOTE when replacing the pick up block.
5. To avoid hazardous invisible Laser Radiation, DO NOT look at the Laser Beam (Objective lens) directly.
6. On models for some countries, laser warning labels are affixed on and inside of the unit, as shown below. For your safety, read these labels carefully before repairing or adjusting the unit.

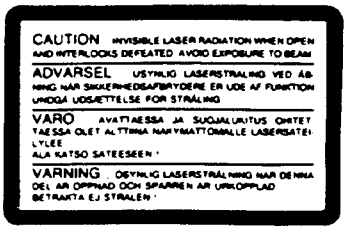
CAUTION

The use of controls or adjustments or the performance of procedures other than those specified herein may result in hazardous radiation.

[EUROPE, SCANDINAVIA, UK and AUSTRALIA]



Label affixed on the rear panel of the unit



Label affixed on the CD MECHA chassis

SYMBOLS FOR PRIMARY DESTINATION

Alphabet indicates the destination of the units as listed below.

Symbol	Prinncipal Destination
A	USA
B	UK
E	Europe(except, UK)
S	Australia
V	Germany
U	Universal
Y*	Custom version

SPECIFICATIONS

[TUNER Section]

Frequency Range

FM ..... 87.5-108MHz(50KHz step) [E/B/J version]
(50/100KHz step) [U_5/U_8/U_6 version]

MW ..... 531-1602KHz(9KHz step) [E/B/S/U/Y_7 version]
530-1710KHz(10KHz step) [U version]

LW ..... 144-288KHz(1KHz step) [E/B only]

Sensitivity

FM ..... 2.6μV (IHF, THD 3%) [except E version]
4μV (IHF, THD 3%) [E version]

MW ..... 1800μV (IHF, THD 10%)

LW ..... 3000μV (IHF, THD 10%)

S/N Ratio

FM ..... 60dB(IHF) STEREO 60dBμV INPUT (except TC-813R)
50dB(IHF) STEREO (TC-813R)

MW ..... more than 27dB (SSG : 74dBμ)

LW ..... more than 25dB (SSG : 74dBμ)

Total Harmonic Distortion(at 1KHz)

FM ..... less than 1.5% STEREO (SSG : 60dBμ)

MW ..... less than 2.5% STEREO (SSG : 74dBμ)

LW ..... less than 3.5% STEREO (SSG : 74dBμ)

Stereo Separation ..... more than 30dB(IHF) (SSG : 60dBμ)

NOTE:

- FM 75KHz Deviation (TC-810/813R)
- Measurement Point : AX-810/AX-815K VCR out (load 22K Ω Terminate Resistor)

[CD Section]

AUDIO CHARACTERISTICS

Frequency Response ..... 20Hz~20KHz(±2.0dB)
Harmonic Distortion ..... 1KHz lesws than 0.07% (20KHz LPF ON)
10KHz less than 0.07% (20KHz LPF ON)
Signal To Ratio ..... more than 80dB (20KHz LPF ON, IHF ON)
Wow and Flutter ..... Below measurable limits
Channel Separation ..... 1KHz more than 65dB (20KHz LPF ON) TRACK 32, 38
10KHz more than 65dB (20KHz LPF ON) TRACK 34, 40

NOTE:

• TEST CD is TCD-781

DIGITAL SIGNAL PROCESSING

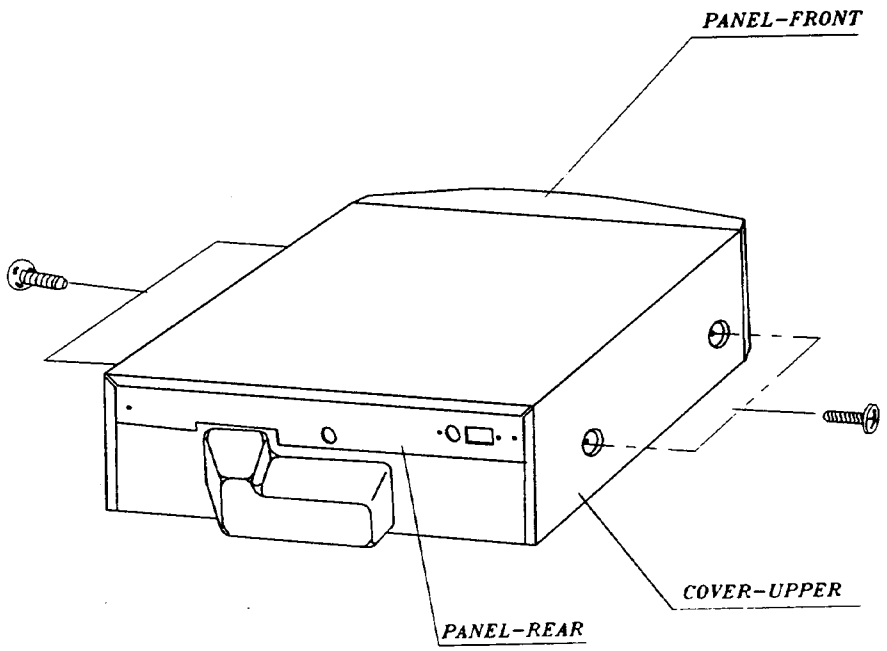
Optical Pickup ..... 3-beam lasetr
Interruption ..... There are no Continuous Noise to 800μm (Track 4)
Block Dots ..... There are no Continuous Noise to 800μm (Track 9)
Finger Print ..... There are no Continuous Noise to 650μm (Track 13)

NOTE:

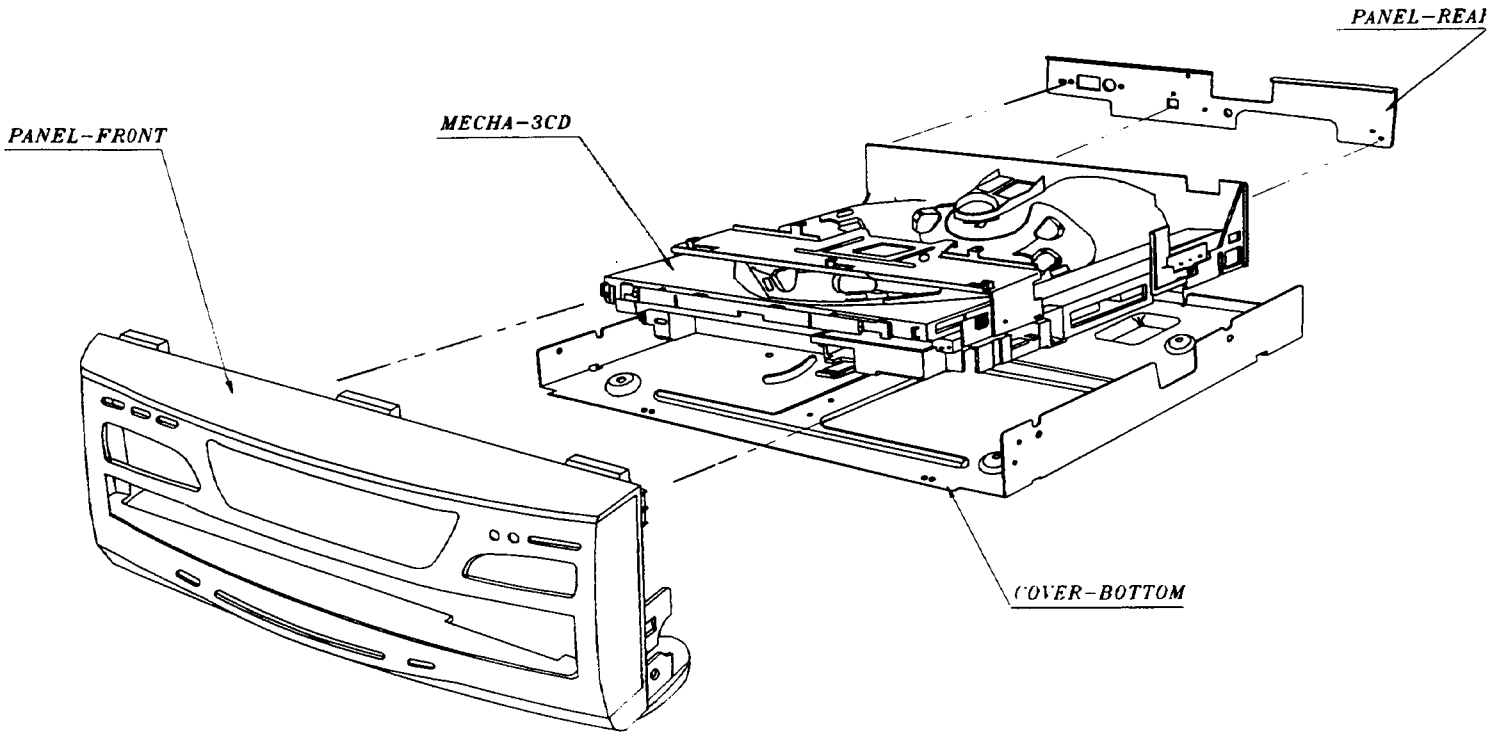
• TEST CD is TCD-725(A-BEX)

Dimensions ..... 270(W) × 112(H) × 330(D)mm
Weight 3.0Kg

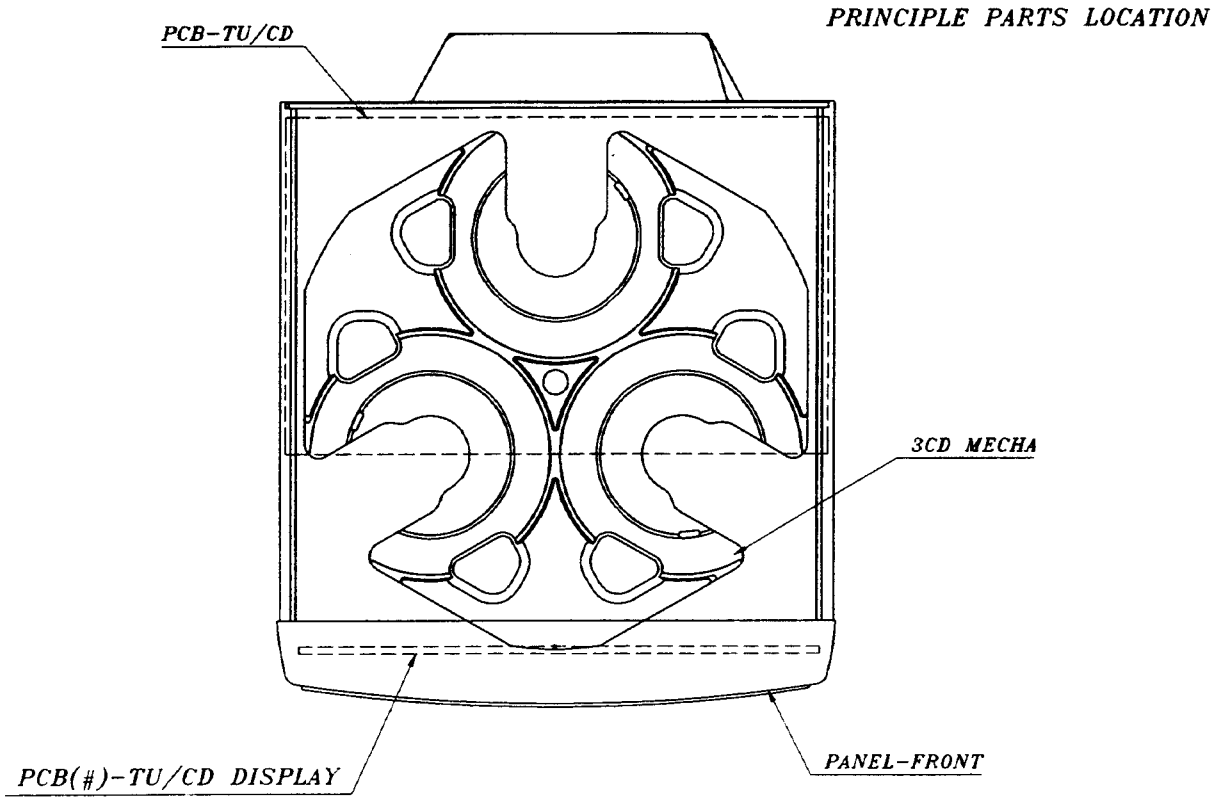
REMOVAL OF COVER-UPPER



REMOVAL OF CD MECHA



Ⅱ. PRINCIPAL PARTS LOCATIONS

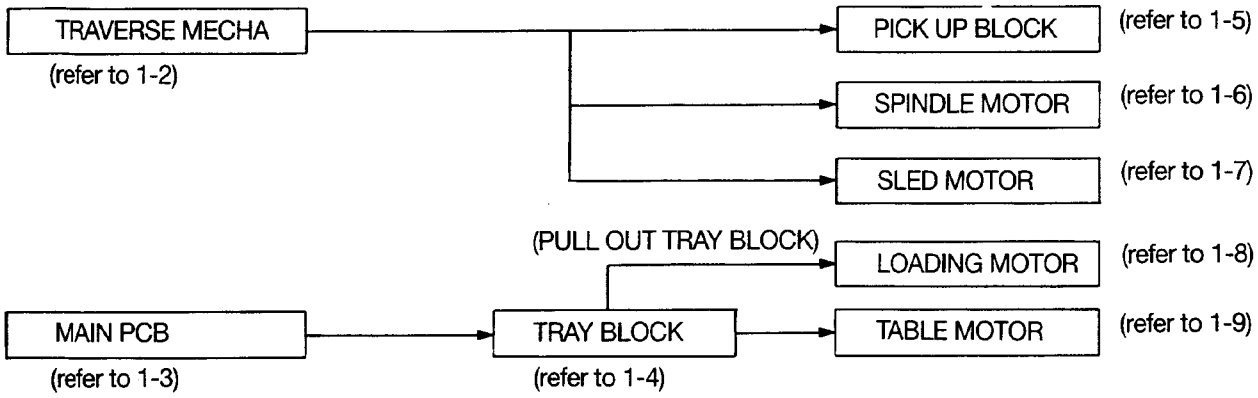


III. REPLACEMENT OF PRINCIPAL MECHANICAL PARTS

1. CDP MECHANISM

1-1. DISMANTLING PROCEDURE OF THE COMPONENTS

When replacement of the mechanical parts is necessary, replace them using the following procedure.



1-2. REMOVAL OF THE TRAVERSE MECHA

1) Disconnect the three connectors carefully (two connectors are on the PICK UP PCB and the other is on the MOTOR PCB of the TRAVERSE MECHA.).
2) Remove the four retaining screws, then remove the PICK UP UNIT.

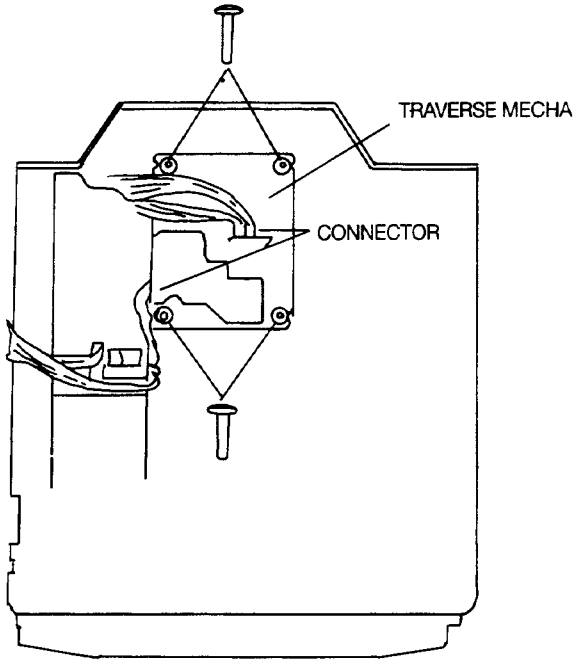


Fig. 1-2

1-3. REMOVAL OF THE TU-CD PCB

1) Disconnect the connectors on the TU-CD PCB.
2) Remove the four retaining screws Ⓐ on the TU-CD PCB and the four screws Ⓑ on the rear panel, then remove the TU-CD PCB.

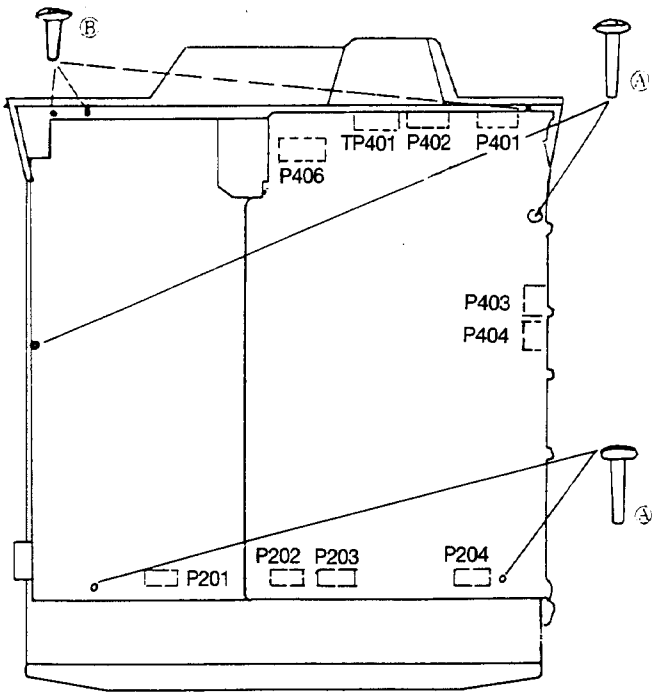


Fig. 1-3

1-4. REMOVAL OF THE TRAY BLOCK

Remove the MAIN PCB.

Slide the GEAR HOLDER RETAINING SCREW in the direction of the arrow and pull out the TRAY BLOCK slowly.

Remove the MAIN PCB HOLDER RETAINING SCREWS then remove the MAIN PCB HOLDER and the BRACKETS on both side.

Remove the TRAY BLOCK.

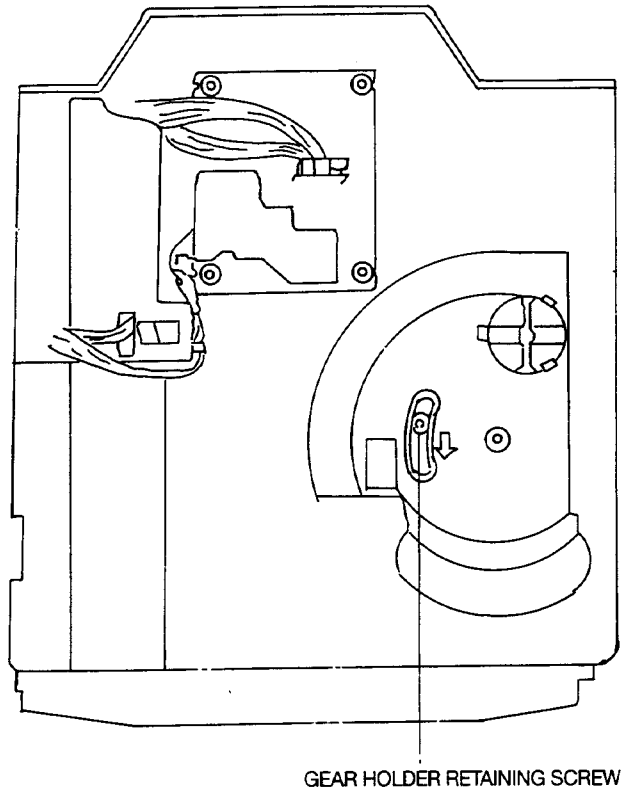


Fig. 1-4

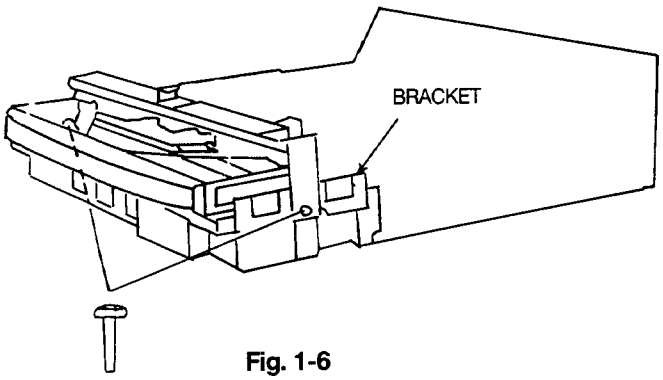


Fig. 1-6

1-5. REPLACEMENT OF THE PICK UP BLOCK

1) Remove the TRAVERSE MECHA.

2) Push the stopper Ⓐ in the right direction and pull the SLIDE SHAFT in the forward direction to remove the PICK UP BLOCK, then replace the PICK UP BLOCK.

3) Reassemble in the reverse order.

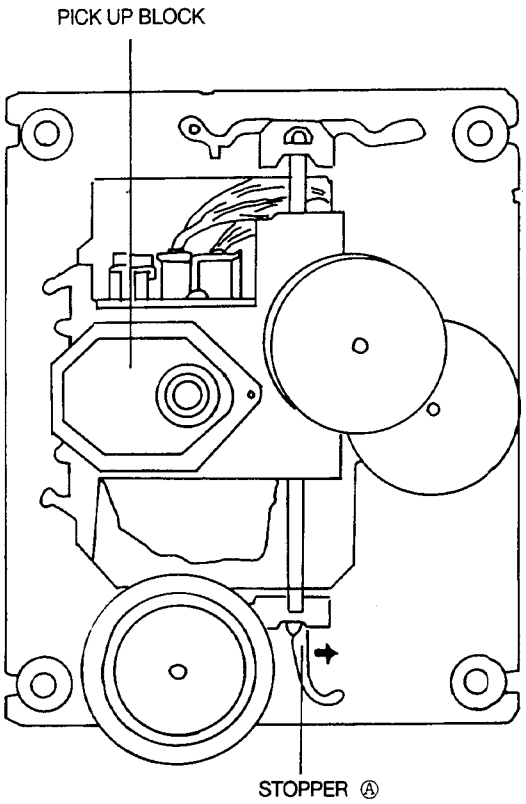


Fig. 1-5

1-6. REPLACEMENT OF THE SPINDLE MOTOR

Replacement of the SPINDLE MOTOR itself is not recommended, because the adjustment of the TURN TABLE height is quite critical and necessitating the use of a special jig.

1-7. REPLACEMENT OF THE SLED MOTOR

1) Remove the TRAVERSE MECHA.
2) Remove the MOTOR PCB.
3) Remove the SLED MOTOR RETAINING Ⓑ SCREWS, then replace the SLED MOTOR.
4) Reassemble in the reverse order.

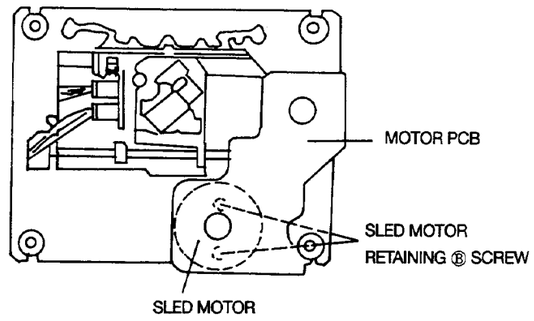


Fig. 1-7

1-8. REPLACEMENT OF THE LOADING MOTOR

1) Push the GEAR HOLDER RETAINING SCREW in the direction of the arrow, then pull out the TRAY BLOCK.
2) Remove the LOADING BELT and the LOADING MOTOR RETAINING SCREWS.
3) Unsolder the lead wires of the LOADING MOTOR with a soldering iron.
4) While opening the LOADING MOTOR'S THREE RETAINING HOOKs, remove and replace the LOADING MOTOR.
5) Reassemble in the reverse order.

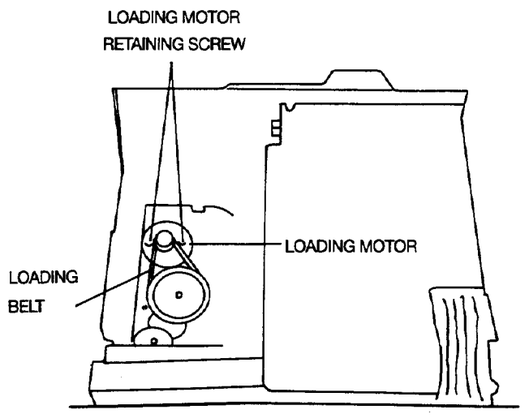


Fig. 1-8

1-9. REPLACEMENT OF THE TABLE MOTOR

1) Remove the MAIN PCB.
2) Remove the TRAY BLOCK.
3) Remove the DISC HOLDER RETAINING SCREW then remove DISC HOLDER.
4) Remove the GEAR COVER then remove the TABLE GEAR(B) and GEAR WORM WHEEL TABLE.
5) Unsolder the lead wires of the TABLE MOTOR.
6) Remove the TABLE MOTOR while opening the TABLE MOTOR RETAINING HOOK, then replace the TABLE MOTOR.
7) Reassemble in the reverse order.

NOTE: 1) When reassembling, make sure that the TABLE GEAR (A)'s hole is aligned with the reference hole on the LOADING TRAY.
2) When instailing the DISC HOLDER on the LOADING TRAY, make sure to place the DISC HOLDER so that the label "3" is facing upward (label "2" faces right and label "1" faces left accordingly).

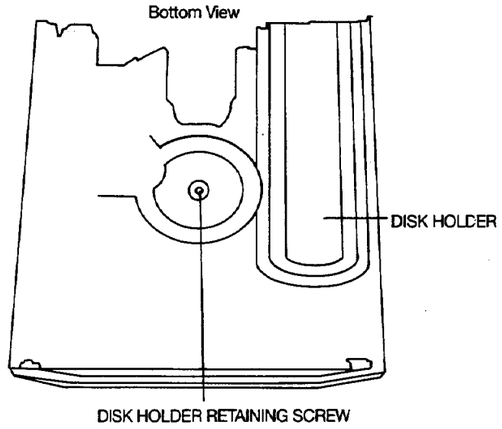


Fig. 1-9

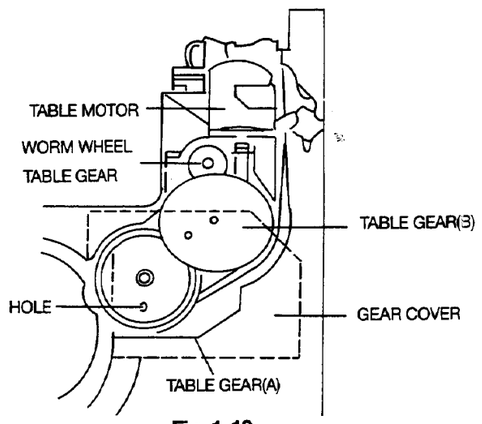


Fig. 1-10

TUNER

STEP	ADJUSTMENT
1.	SSG FREQ & OUTPUT LEVEL
2.	SET tunning FREQUENCY
3.	TEST POINT or ADJUSTMENT PARTS
4.	REMARK(○) or RESULT (＊)

→ ADJ. PART

⇢ TEST POINT

FM SECTION

NOTE
SET the S.S.G. to 1kHz, 75kHz devation

1 CENTER VOLTAGE
1. 98. OMHz, 60 dBu(MONO)
2. 98. OMHz
3. TP101/T106
4. ○Connect the DC Voltmeter to TP101,
   ＊DC 0±50mV

ADJUST T106

2 TUNING INDICATOR
1. 98. OMHz, 20 dBu(MONO)
2. 98. OMHz
3. TUNED Indicator on the front panel, VR101
4. ＊TUNED indicator is it

3 STEREO SEPERATION
1. 98. OMHz, 60dBu(STEREO L/R CHANNEL ONLY)
2. 98. OMHz
3. TP103/VR103
4. ○Connect the AC-voltmeter to TP103
   ＊Minimum output level for opposite channel

4 RDS ID ADJ
1. 98. OMHz, 50dBuV, RDS ON (2kHz DEV)
2. 98. OMHz
3. TP104(R208 lead)/VR201
4. Connect the osilloscope to TP104(R208lead)
   ＊Minimum output level

LW(SW) SECTION

NOTE 1. Set the S.S.G. to 1kHz 30% modulation
2.Freq. in 〈〉are for the SW model

1 LW(SW) OSC
1. 144kHz
2. 146kHz 〈3.8MHz〉
3. TP103/T104
4. ○Connect the DC Voltmeter between TP103,
   ＊Maximum out level.

2 LW(SW) SENSITIVITY
1. 160kHz. 70dBu 〈4MHz. 30dBu〉
2. 160kHz 〈4MHz〉
3. TP103/T104
4. ○Connect the AC Voltmeter to TP103
   ＊Maximum out level.

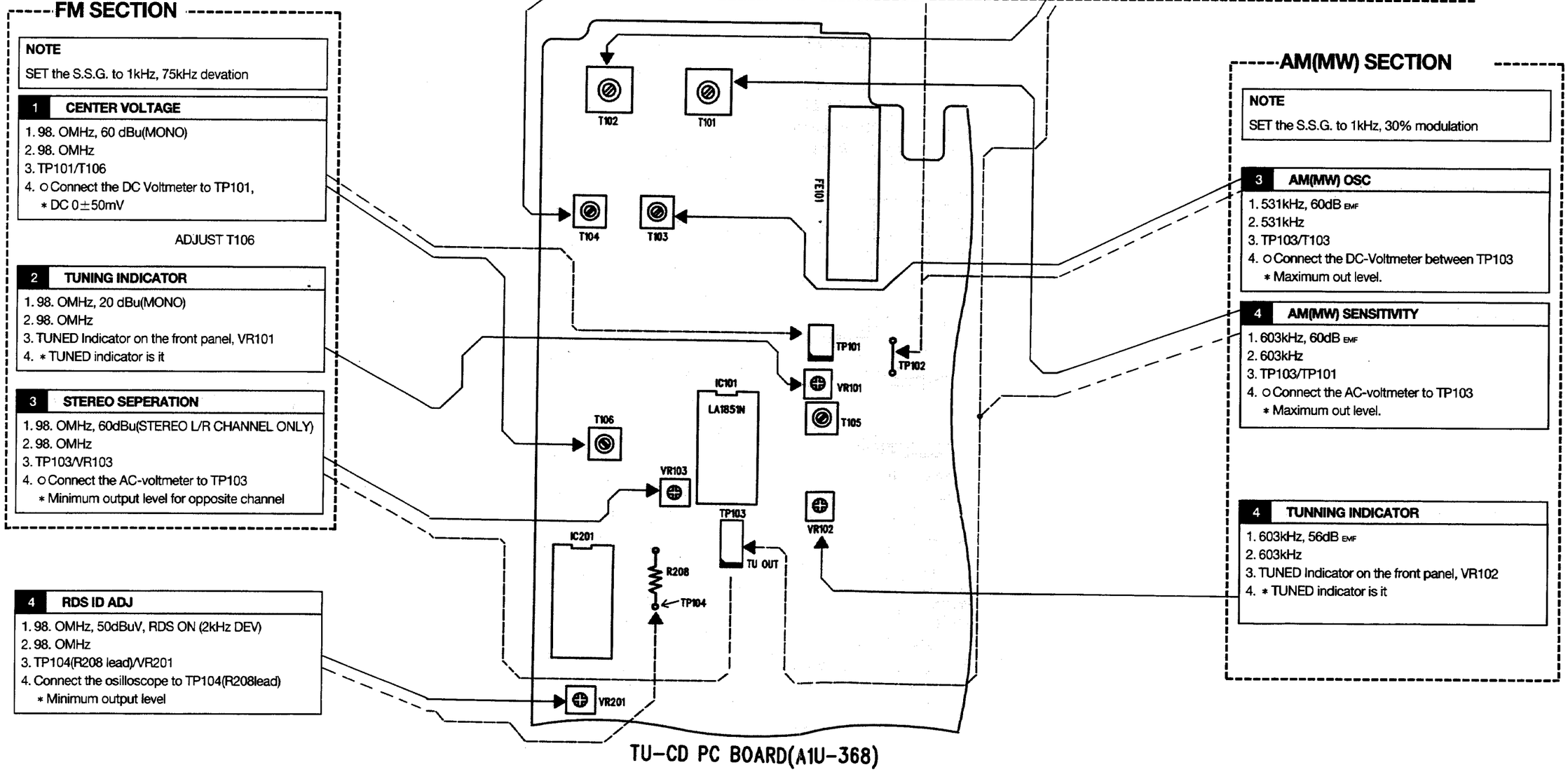
AM(MW) SECTION

NOTE
SET the S.S.G. to 1kHz, 30% modulation

3 AM(MW) OSC
1. 531kHz, 60dB EMF
2. 531kHz
3. TP103/T103
4. ○Connect the DC-Voltmeter between TP103
   ＊Maximum out level.

4 AM(MW) SENSITIVITY
1. 603kHz, 60dB EMF
2. 603kHz
3. TP103/TP101
4. ○Connect the AC-voltmeter to TP103
   ＊Maximum out level.

4 TUNNING INDICATOR
1. 603kHz, 56dB EMF
2. 603kHz
3. TUNED Indicator on the front panel, VR102
4. ＊TUNED indicator is it



TU-CD PC BOARD(A1U-368)

CD

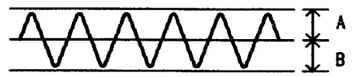
Engaging the "CD TEST"mode.
While pressing holding both the "PROG" and "SLEEP" buttons, plug in the AC power cord to the AC outlet.

STEP	ADJUSTMENT
1. TEST DISC	
2. SET STATUS	
3. TEST POINT & ADJUSTMENT PARTS	
4. REMARK(●), RESULT (*)	

→ ADJ. PART
⇢ TEST POINT

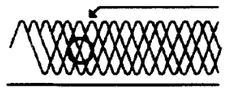
1 E-F BALANCE

1. Test disc A-BEX TCD-781
2. PLAY
3. TP401(P405)/VR402
4. ● Connect an oscilloscope to TP101
   Tracking gain short (VR104)
   * A=B (TEST / 2.5V)



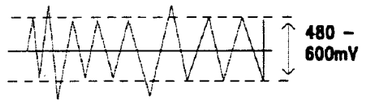
2 FOCUS OFF-SET

1. Test disc A-BEX TCD-781
2. PLAY
3. TP401(P405)/VR401
4. ● Adjust VR101 so that RF signal of the testpoint TP101(RF) is MAX and CLEARREST



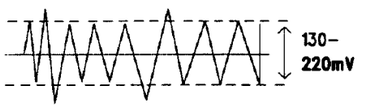
3 FOCUS SERVO GAIN

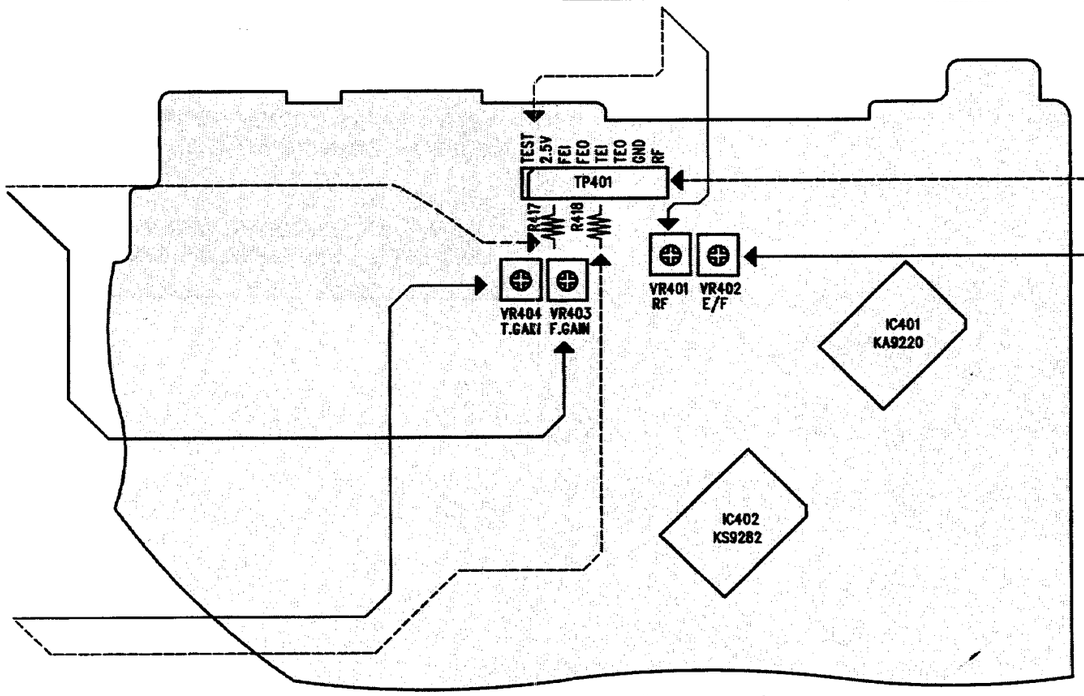
1. Test disc A-BEX TCD-781
2. PLAY(TRACK NO1)
3. R417
4. ● Connect Oscilloscope Between
   R417 and GND
   * 480mV-600mV



4 TRACKING SERVO GAIN

1. Test disc A-BEX TCD-781
2. PLAY(TRACK NO1)
3. TP401(P405)/VR404
4. ● Connect Oscilloscope Between
   R418 and GND
   * 130mV-220mV





TU-CD PC BOARD(A1U-368)

V. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list Part NO., Model No., and the description of each part.
   Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering.
   If not, a part different from the one you ordered may be delivered.

[NOTE]

The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.

WARNING

⚠(*) INDICATED SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠(*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉDE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT.

2. PC BOARD BLOCK

Ref. No.	Part No.	Description
1	A2CC-F5000-A2E	TU/CD PCB (TC-813R E-version)
	A2CC-F5001-A2Y	TU/CD PCB (TC-810 U/S-version)
2	A2CC-F5000-A3E	FRONT PCB

3. PCB(#)-TU/CD MAIN (A1U-368)

Ref. No.	Part No.	Description
BF101	BTBP-00011-BPM	FILTER MICA PRINT BPM36A 88-108MHz[E. B]
CF103	BTCE-00050-004	FILTER-CERAMIC SFU 450B
CF101	BTCE-00152-107	FILTER-CERAMIC
CF102		SFE 10.7MJA10H-A FTZ[E.B]
	BTCE-00060-107	FILTER-CERAMIC SFE 10.7MS3G-A [U.Y]
CF104	BTCE-00311-004	FILTER-CERAMIC CSB456F18
C250	CEGT-B473Z-0J0	CAPACITOR E/DO LAYER 0.047F Z 5.5V 12.7pi T
D444	DDTZ-G022B-SO0	ZENER DIODE MTZ2.2B 2.22-2.41
D443	DDTZ-G036B-SO0	ZENER DIODE MTZ3.6B 3.600-3.845
D442	DDTZ-G047B-SO0	ZENER DIODE MTZ4.7B 4.55-4.80
D492	DDTZ-G051C-SO0	ZENER DIODE MTZ5.1C 5.09-5.73
D445	DDTZ-G056B-SO0	ZENER DIODE
D492		MTZ5.6B 5.45-5.73
D441	DDTZ-G75C-SOS	ZENER DIODE MTZJ7.5C 7.29-7.67
IC102	ICCM-00490-S10	IC TUNER PLL LC72131 DIP 22PIN
IC407	ICCM-20010-SQ0	IC HEX INVERTERS GD74HC04 DIP14
IC202	ICCM-20810-S10	IC CMOS LSI LC7073 DIP18
IC402	ICDG-00940-SE0	IC DSP+DAC (CDP) KS 9282B QFP80
IC401	ICDG-00950-SE0	IC RF+SERVO (CDP) KA 9220B QFP80
IC404	ICDG-01480-SB0	IC MOTOR DRIVER BA6247 SIP10
IC403	ICLN-01590-SE0	IC MOTOR CONTROL CDP KA 9258D SOP28
IC101	ICLN-01640-S10	IC AM/FM IF MPX LA1851N
IC201	ICLN-02950-S10	IC RDS LA2232
IC405	ICOP-00130-SE0	IC DUAL OP AMP
IC406		KA4558S SIP9
IC408	ICRG-00570-SD0	IC SYSTEM RESET KIA7021P/F 2.1V TO-92
T106	IFFD-00140-E60	IFT-FM DET AFD014 7.4mm-CAN
T105	KIAA-00140-ED0	COIL-AM IFT AAA-014B
T103	KIAO-00240-E20	COIL-AM OSC AAO024 MW 7mm-CAN
T104	KIAO-00301-E20	COIL-AM OSC AAO025 LW 7mm-CAN[E.B]
T102	KIAT-00301-E20	COIL-AM ANT AAT035-1 MW 10mm-CAN
T101	KIAT-00351-E20	COIL-AM ANT AAT030-1 LW 10mm-CAN[E.B]
T108	KIML-A0010-E60	COIL-FM MPX FILTER
T109		AMA-001A 19KHz 10mm-CAN
T107	KIML-A0020-E20	COIL-FM MPX FILTER AFL002 114KHz 7mm-CAN
JK101	TEAT-00051-03R	TERMINAL ANTENNA AK1/2-1058A
VR101	VFEB-A001B-103	RESISTOR-SEMI FIXED
VR103		EVN DXA A03 B14 10kohm
VR201		
VR401	VFEB-A001B-223	RESISTOR-SEMI FIXED
VR402		EVN DXA A03 Be4 22kohm
VR403		
VR404		
VR102	VFEB-A001B-472	RESISTOR-SEMI FIXED EVN DXA A03 BQ3 4.7kohm

4. PCB(#)-TU/CD FRONT (A2U-178)

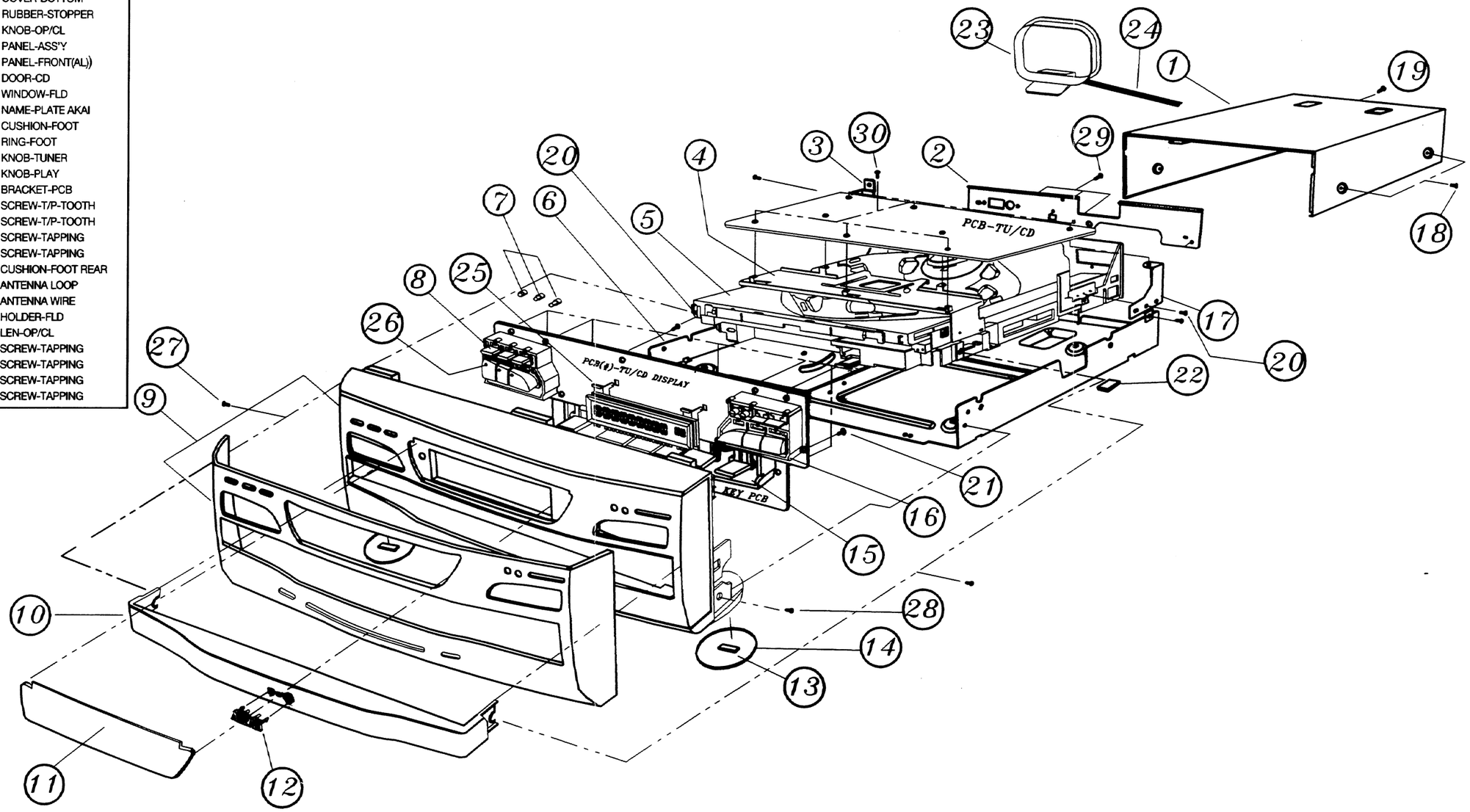
Ref. No.	Part No.	Description
FL501	DPFL-00500-00P	DISPLAY FLUORSCENT SVA 12MM05 TU/CD
LD502	DPLT-00670-MC3	DOT-LED
LD503		SLH-38MC3 GRN 3.1PI
LD510		
IC502	ICCM-00400-UA0	IC EEPROM 24LC02B1P
IC503	ICHY-00220-U60	IC REMOTE RECEIVER TFMT5380
IC501	ICMP-01570-S90	IC MICRO COMPUTER M38184MA-262FP QFP100
X502	KTAL-00360-327	CRYSTAL QW 6 32.768KHz
X501	KTRE-00160-060	RESIBATOR CST6.00MGW 6.00MHz
RG501	NERT-J0018-473	NETWORK RESISTOR RGLE8T J 47K 8P 1.78mm
SW501	SWTA-00350-060	SWITCH TACT
SW502		SKHV10906A
SW503		
SW504		
SW505		
SW506		
SW507		
SW508		
SW509		
SW510		
SW511		
SW512		
SW513		
SW514		
SW515		
SW516		
SW517		
SW518		
SW519		
Q501	TRTA-0050J-S0S	TRANSISTOR P-H FREQ
Q502		DTA123J-S W/RESIST TO92M
Q503		
Q505		

1. RECOMMENDED PARTS

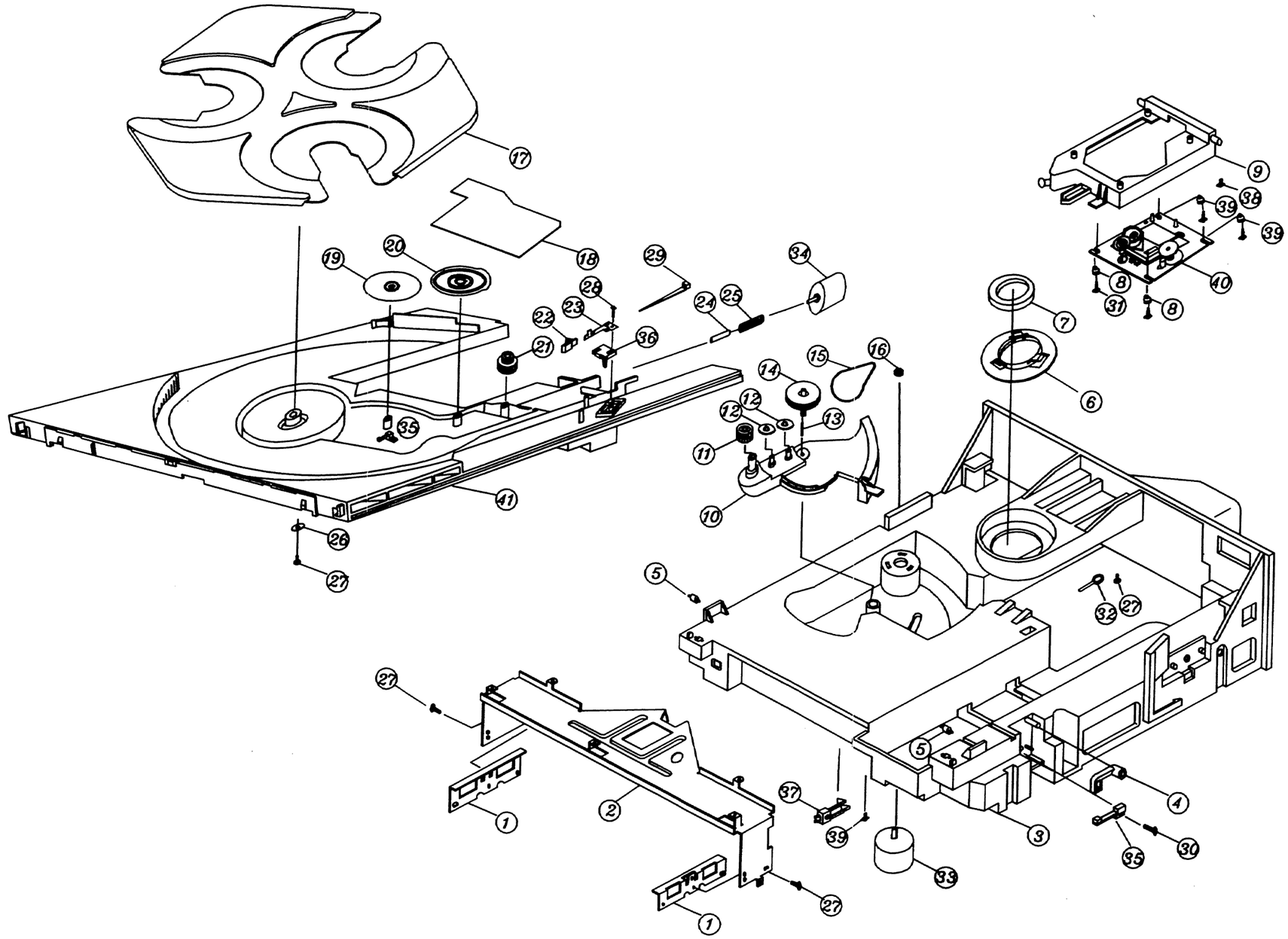
Ref. No.	Part No.	Description
VD101	DDSV-0003B-S30	DIODE VVC
VD102		ISV149B AM 8V DIP2 S
VD103		[E.B]
VD104		[E.B]
D403	DDTR-00040-T10	DIODE RECTIFIER
D404		IN4004(400V 1A) DO-41 T
D405		
D408		
D101	DDTS-00060-S00	DIODE-SI
D102		1SS131 (90V 0.13A) DO-40 T
D103		
D104		
D105		
D107		
D181		
D401		
D402		
D407		
D493		
D494		
D495		
D444	DDTZ-G022B-S00	DIODE ZENER
		MTZ2.2B 2.22-2.41 D040 T
D443	DDTZ-G036B-S00	DIODE ZENER
		MTZ3.6B 3.600-3.845 D040 T
D442	DDTZ-G047B-S00	DIODE ZENER
		MTZ4.7B 4.55-4.80 D040 T
D492	DDTZ-G051C-S00	DIODE ZENER
		MTZ5.1C 5.09-5.37 D040 T
D445	DDTZ-G056B-S00	DIODE ZENER
D492		MTZ5.6B 5.45-5.73 D040 T
D443	DDTZ-G075C-S0S	DIODE ZENER
		MTZJ7.5C 7.29-7.67 D034 T
IC102	ICCM-00490-S10	IC TUNER PLL
		LC72131 DIP 22PIN
IC407	ICCM-20010-SQ0	IC HEX INVERTERS
		GD74HC04 DIP14
IC202	ICCM-20810-S10	IC CMOS LSI
		LC7073 DIP18 [E.B]
IC402	ICDG-00940-SE0	IC D.S.P+D.A.C (CDP)
		KS-9282B QFP80
IC401	ICDG-00950-SE0	IC RF+SERVO (CDP)
		KA-9220B QFP80
IC404	ICDG-01480-SB0	IC MOTOR DRIVER
		BA6247 SIP10
IC403	ICLN-01590-SE0	IC MOTOR CONTROL CDP
		KA-9258D HSOP28
IC101	ICLN-01640-S10	IC AM/FM IF MPX
		LA1851N DIP30
IC201	ICLN-02950-S10	IC
		LA2232[E.B]
IC405	ICOP-00130-SE0	IC DUAL OP AMP
IC406		KA4558S SIP9
IC408	ICRG-00570-SD0	IC SYSTEM RESET
		KIA7021P/F 2.1V T0-92
X101	KTAL-00041-072	CRYSTAL
		HC-49/U 7.200000MHz
X401	KTAL-00074-169	CRYSTAL
		HC-49/U 16.9344MHz
X202	KTRE-00051-040	RESONATOR
		CSA4.00MG 4MHz[E.B]
X201	BTCE-00312-004	FILTER CERAMIC
		CSB456F33[E.B]
FR101	RFUM-GR47J-130	RESISTOR-FUSIBLE
		0.47ohm 1/2W 5% M
R504	RMOT-H3R3J-030	RESISTOR-MOR
		3.3ohm 1W RF-TYPE
R503	RCFT-G4R7J-020	RESISTOR-CARBON FILM
		4.7ohm 1/2W 5% T
GP401	SKOP-00010-001	SOCKET OTICAL
		GP1F32T
SW401	SWTA-00230-06V	SWITCH-TACT
		SKHH17910A 12V 50mA W/GND
Q106	TRTA-0008G-SD0	TRANSISTOR P-H FREQ
Q107		KTA1266-GR
Q108		
Q201		
Q401		
Q420		
Q412	TRTA-0041E-SOS	TRANSISTOR P-H FREQ
		DTA144E-S W/RESIST. T092M
Q114	TRTA-0042E-SOS	TRANSISTOR P-H FREQ
Q408		DTA124E-S T092M
Q402	TRTB-00170-SB0	TRANSISTOR P-H FREQ
Q417		2SB1425 T103 T092L
Q101	TRTC-0010Y-SD0	TRANSISTOR N-H FREQ
		KTC1923-Y T092
Q102	TRTC-0016G-SD0	TRANSISTOR N-H FREQ
Q103		KTC3198-GR T092M
Q111		
Q112		
Q116		
Q117		
Q409		
Q410		
Q421		
Q113	TRTC-0039Y-SD0	TRANSISTOR N-H FREQ
		KTC3205-Y T092L
Q115	TRTC-0060E-S0S	TRANSISTOR N-H FREQ
		DTC144E-S T092M
Q110	TRTC-0061E-S0S	TRANSISTOR N-H FREQ
Q407		DTC124E-S T092M
Q411	TRTC-0062E-S0S	TRANSISTOR N-H FREQ
		DTC114E-S T092M
Q202	TRTC-0064E-SOS	TRANSISTOR N-H FREQ
		DTC143E-S W/RESIST T092M
Q416	TRTC-0070Z-SOS	TRANSISTOR N-H FREQ
		DTC143Z-S W/RESIST T092M
Q413	TRTC-0075T-SOS	TRANSISTOR N-H FREQ
Q414		DTC114T-S W/RESIST T092M
Q403	TRTC-01090-SB0	TRANSISTOR N-H FREQ
Q404		DTC143YSA W/RESIST SPT
Q405		
Q406		
Q415		
Q419		
Q104	TRTD-00200-SD0	TRANSISTOR N-L FREQ
Q105		KTD-1302 T092
Q109		
FE101	TUFF-00220-00V	FRONT-END
		KCF205V(CE)

Ⅵ. EXPLODED VIEW

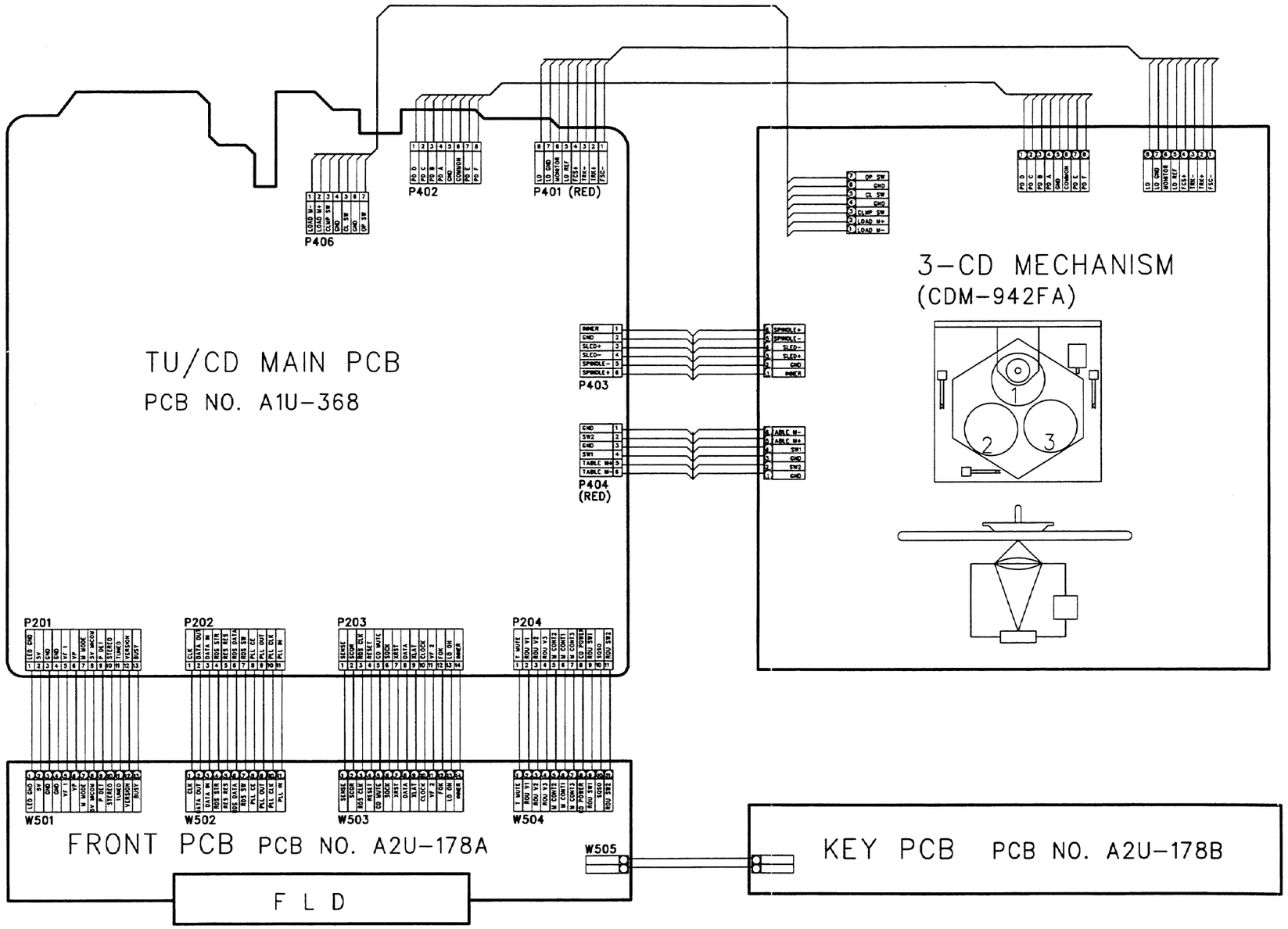
Ref. No.	Part No.	Description
1	MPAC-03950-ZZ1	COVER-UPPER
2	MPAC-03470-ZZ2	PANEL-REAR
3	MPAC-04010-003	HOLDER-PCB(B)
4	MPAC-03460-002	HOLDER-PCB(A)
5		3CD MECHA
6	MPAC-03860-001	COVER-BOTTOM
7	MRAG-11940-004	RUBBER-STOPPER
8	MJAF-02760-ZZ2	KNOB-OP/CL
9	MJAF-04720-ZZ1	PANEL-ASS'Y
	(MEAC-03980-ZZ2	PANEL-FRONT(AL))
10	MJAF-02730-ZZ2	DOOR-CD
11	MJAF-06480-ZZ3	WINDOW-FLD
12	MJAF-05530-ZZ3	NAME-PLATE AKAI
13	MRAG-11130-004	CUSHION-FOOT
14	MAAC-14490-ZZ4	RING-FOOT
15	MJAF-02750-ZZ2	KNOB-TUNER
16	MJAF-02740-ZZ2	KNOB-PLAY
17	MPAC-13170-004	BRACKET-PCB
18	MMAC-03592-004	SCREW-T/P-TOOTH
19	MMAC-03590-004	SCREW-T/P-TOOTH
20	XSTB-30080-ZB4	SCREW-TAPPING
21	XSTB-30100-ZY4	SCREW-TAPPING
22	MRAG-10920-004	CUSHION-FOOT REAR
23	ANTL-00060-E50	ANTENNA LOOP
24	ANTW-00020-202	ANTENNA WIRE
25	MPAC-14200-004	HOLDER-FLD
26	MAAF-15000-ZZ4	LEN-OP/CL
27	XSTB-30080-ZY4	SCREW-TAPPING
28	XSTB-30080-ZY4	SCREW-TAPPING
29	XSTB-30100-ZB4	SCREW-TAPPING
30	XSTS-30080-ZY4	SCREW-TAPPING



CD MECHANISM

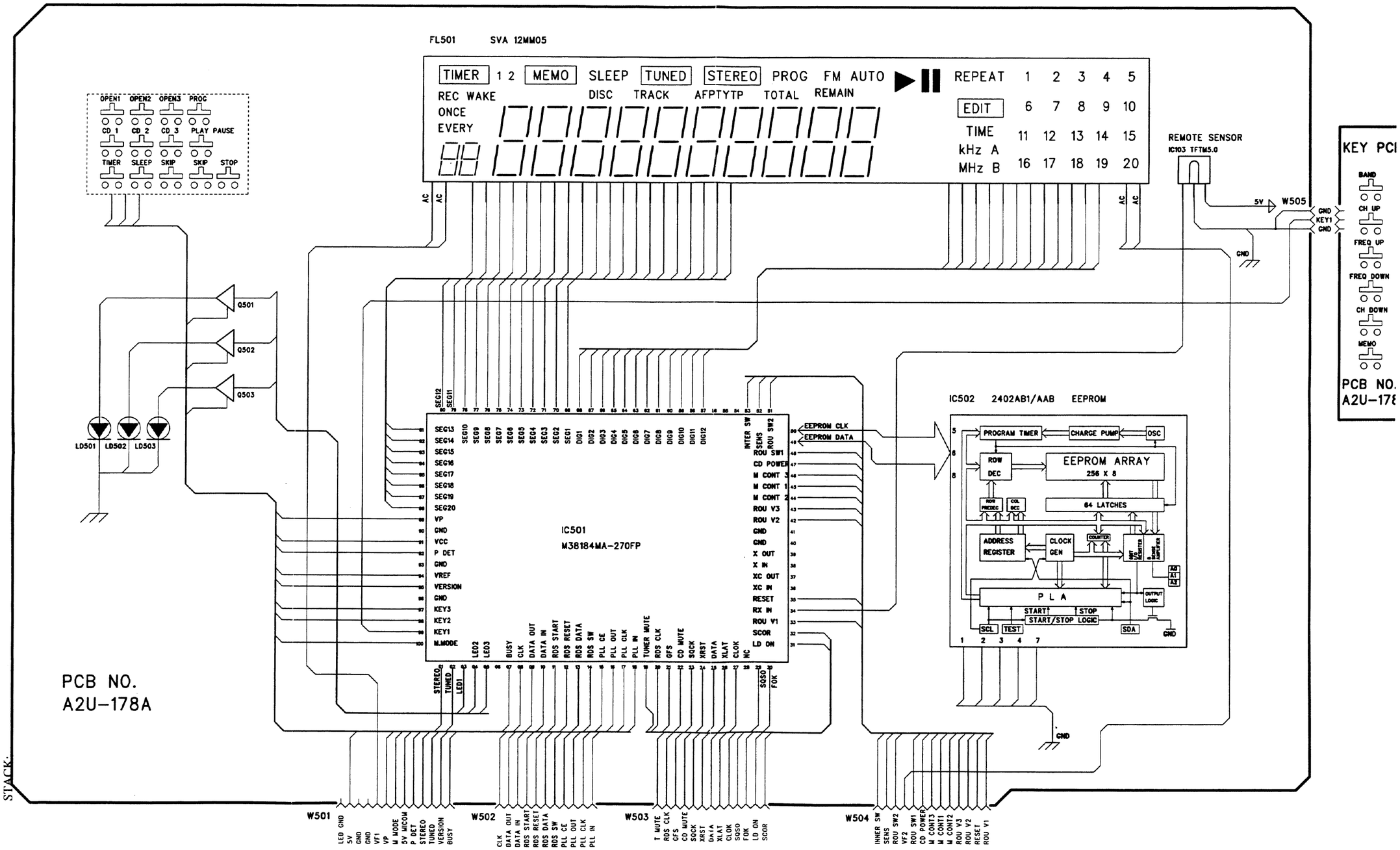


Ref. No.	Part No.	Description
1	MPAC-12920-004	HOLDER TRAY
2	MPAC-03460-002	HOLDER PCB(A)
3	MJAF-03271-ZZ1	CHASSIS-MAIN
4	MJAF-11510-004	LEVER SW LOADING
5	MJAF-11550-004	ROLLER
6	MJAF-02620-002	CLAMPER (C)
7	MMAC-13180-004	MAGNET
8	MRAG-11400-004	INSULATOR F BLUE
9	MJAF-02190-002	HOLDER TRAVERSE
10	MJAF-02200-002	HOLDER GEAR
11	MJAF-11500-004	GEAR LOADING(A)
12	MJAF-11530-004	GEAR LOADING(B)
13	MMAC-13150-004	HOLDER GEAR SHAFT
14	MJAF-04680-003	PULLEY GEAR
15	MRAG-10200-004	BELT
16	MJAF-11520-004	PULLEY
17	MJAF-03260-ZZ1	HOLDER DISC(B)
18	MGAG-10180-ZZ4	COVER GEAR
19	MJAF-04710-003	GEAR TABLE(B)
20	MJAF-04690-003	GEAR TABLE(A)
21	MJAF-04700-003	GEAR WORMWHEEL TABLE
22	MJAF-11540-004	LEVER SW
23	MMAC-12930-004	SP PLATE HOLDER DISC
24	MMAC-13160-004	SHAFT WORM
25	MJAF-11560-004	WORM TABLE
26	MPAC-13541-004	PLAIN WASHER
27	XSTB-30080-ZB4	SCREW TAPPING
28	XSTP-20080-ZB4	SCREW TAPPING
29	MJAG-04540-004	CABLE TIE L80
30	XSTB-20040-ZY8	SCREW TAPPING
31	MMAC-14011-004	SCREW GRADEATED
32	MPAC-06710-004	CLAMP WIRE
33	EMWG-00100-130	MOTOR
34	EMWG-00110-120	MOTOR
35	SWLF-00150-AS0	SWITCH LEAF
36	SWSL-00595-068	SWITCH SLIDE
37	SWLF-00160-AS0	SWITCH LEAF
38	XSTS-30080-ZY4	SCREW TAPPING
39	MRAG-11401-004	INSULATOR B RED
40	PU32-00070-000	LASER PICK UP
41	MJAF-03290-ZZ1	TRAY LOADING

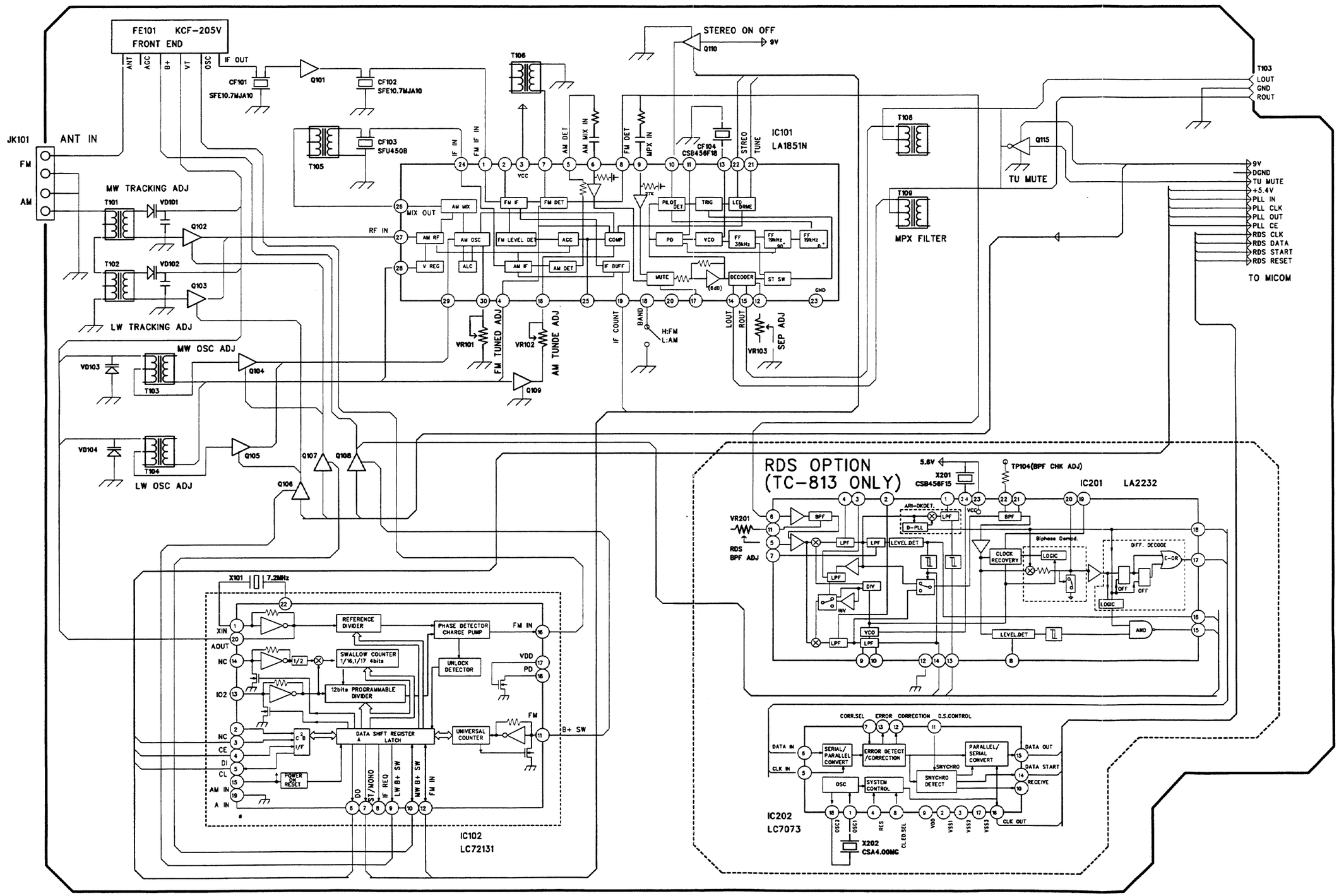

P406
P402
P401 (RED)
3-CD MECHANISM
(CDM-942FA)
TU/CD MAIN PCB
PCB NO. A1U-368
P403
P404
(RED)
P201
P202
P203
P204
W501
W502
W503
W504
W505
FRONT PCB PCB NO. A2U-178A
F L D
KEY PCB PCB NO. A2U-178B
REMARK
: WIRE
: WAFER

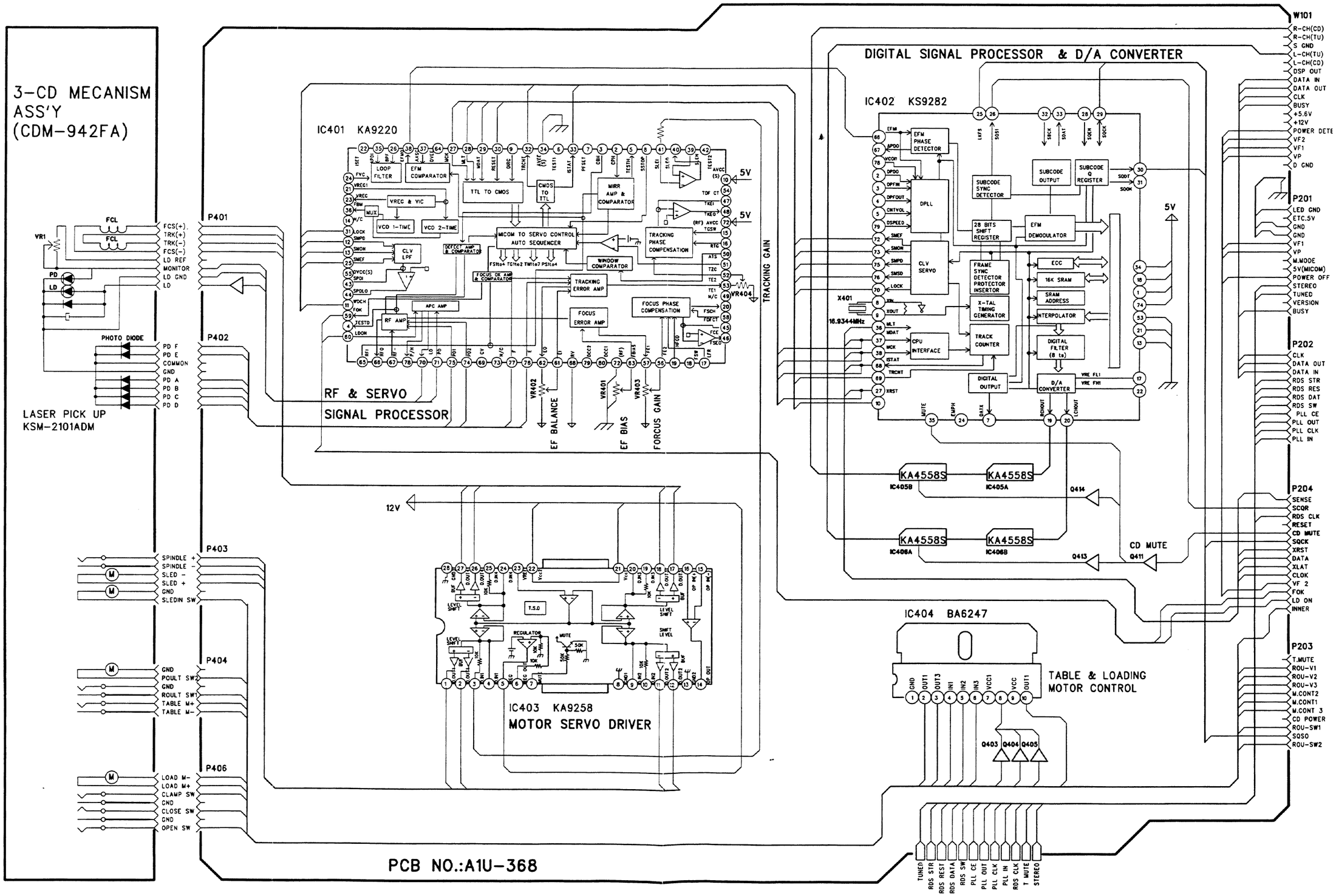
Ⅷ. BLOCK DIAGRAM

FRONT


FL501 SVA 12MM05
TIMER 1 2 MEMO SLEEP TUNED STEREO PROG FM AUTO
REC WAKE ONCE EVERY
DISC TRACK AFPTYTP TOTAL REMAIN
REPEAT 1 2 3 4 5
EDIT 6 7 8 9 10
TIME 11 12 13 14 15
kHz A MHz B 16 17 18 19 20
OPEN1 OPEN2 OPEN3 PROG
CD 1 CD 2 CD 3 PLAY PAUSE
TIMER SLEEP SKIP SKIP STOP
REMOTE SENSOR
IC103 TFTM5.0
5V
W505
GND
KEY1
KEY PCI
BAND
CH UP
FREQ UP
FREQ DOWN
CH DOWN
MEMO
PCB NO.
A2U-17
Q501
Q502
Q503
LD501 LD502 LD503
IC501
M38184MA-270FP
SEG13 SEG14 SEG15 SEG16 SEG17 SEG18 SEG19 SEG20
VP GND VCC P DET GND VREF VERSION GND KEY3 KEY2 KEY1 M.MODE
STEREO TUNED LED1 LED2 LED3
BUSY CLK DATA OUT DATA IN RDS START RDS RESET RDS DATA RDS SW PLL CE PLL OUT PLL CLK PLL IN
TUNER MUTE RDS CLK GFS CD MUTE SQCK XRST DATA XLAT CLOK SQSO FOK
INTER SW SENS ROU SW1 ROU SW2
EEPROM CLK EEPROM DATA
CD POWER M CONT 3 M CONT 1 M CONT 2 ROU V3 ROU V2 GND GND X OUT X IN XC OUT XC IN RESET RX IN ROU V1 SCOR LD ON
IC502 2402AB1/AAB EEPROM
PROGRAM TIMER
CHARGE PUMP
OSC
ROW DEC
EEPROM ARRAY 256 X 8
64 LATCHES
ADDRESS REGISTER
CLOCK GEN
COUNTER
I/O REGISTER
PAGE BUFFER
A0 A1 A2
P L A
OUTPUT LOGIC
START STOP
START/STOP LOGIC
SCL TEST SDA GND
PCB NO.
A2U-178A
STACK
W501 LED GND 5V GND GND VF1 VP M MODE 5V MICO4 P DET STEREO TUNED VERSION BUSY
W502 CLK DATA OUT DATA IN RDS START RDS RESET RDS DATA RDS SW PLL CE PLL OUT PLL CLK PLL IN
W503 T MUTE RDS CLK GFS CD MUTE SQCK XRST DATA XLAT CLOK SQSO FOK LD ON SCOR
W504 INNER SW SENS ROU SW2 VF2 ROU SW1 CD POWER M CONT3 M CONT1 M CONT2 ROU V3 ROU V2 RESET ROU V1

TUNER

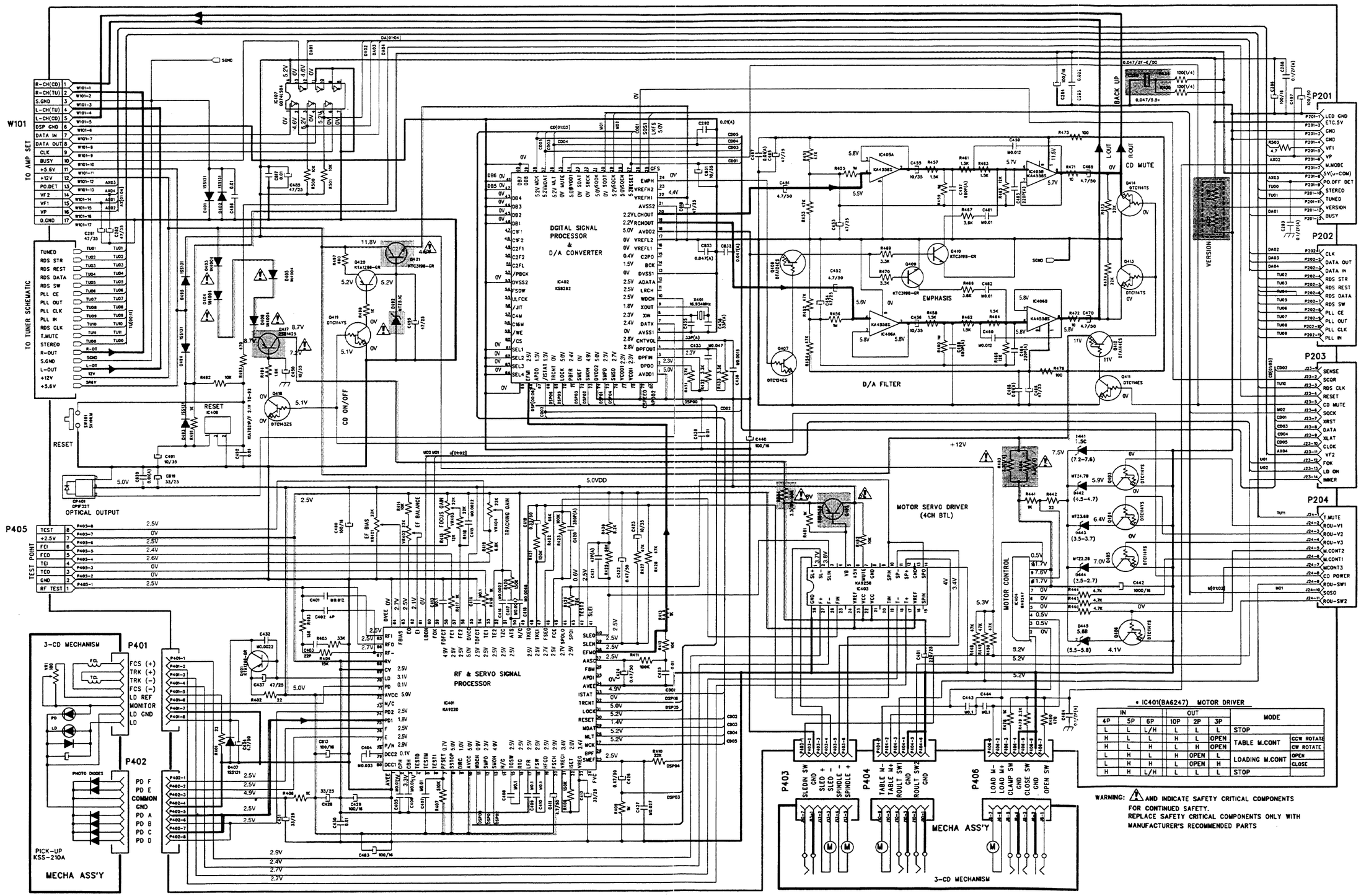

FE101 KCF-205V
FRONT END
ANT
AGC
B+
VT
OSC
IF OUT
CF101
SFE10.7MJA10
Q101
CF102
SFE10.7MJA10
CF103
SFU4508
T105
T106
STEREO ON OFF
9V
Q110
JK101
ANT IN
FM
AM
MW TRACKING ADJ
T101
VD101
Q102
T102
VD102
Q103
LW TRACKING ADJ
MW OSC ADJ
VD103
T103
Q104
VD104
T104
LW OSC ADJ
Q105
Q106
Q107
Q108
IC101
LA1851N
IF IN
FM IF IN
AM DET
AM MIX IN
FM DET
MPX IN
CF104
CSB456F18
STEREO
TUNE
VCC
MIX OUT
RF IN
AM MIX
FM IF
FM DET
AM RF
AM OSC
FM LEVEL DET
AGC
COMP
V REG
ALC
AM IF
AM DET
IF BUFF
PILOT DET
TRIG
LED STEREO
PD
VCO
FF 38kHz
FF 19kHz 90°
FF 19kHz 0°
MUTE
6dB
DECODER
ST SW
GND
VR101
FM TUNED ADJ
VR102
AM TUNDE ADJ
IF COUNT
BAND
H:FM
L:AM
LOUT
ROUT
VR103
SEP ADJ
T108
MPX FILTER
T109
Q115
TU MUTE
T103
LOUT
GND
ROUT
9V
DGND
TU MUTE
+5.4V
PLL IN
PLL CLK
PLL OUT
PLL CE
RDS CLK
RDS DATA
RDS START
RDS RESET
TO MICOM
RDS OPTION
(TC-813 ONLY)
5.6V
X201
CSB456F15
TP104(BPF CHK ADJ)
IC201
LA2232
VR201
RDS
BPF ADJ
ARI-DKDET.
D-PLL
LPF
BPF
LEVEL DET
Biphase Demod.
CLOCK RECOVERY
LOGIC
DIFF. DECODE
E-OR
DIV
INV
VCO
AND
X101
7.2MHz
XIN
AOUT
NC
IO2
NC
CE
DI
CL
AM IN
A IN
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
FM IN
SWALLOW COUNTER 1/16,1/17 4bits
UNLOCK DETECTOR
VDD
PD
12bits PROGRAMMABLE DIVIDER
DATA SHIFT REGISTER LATCH
UNIVERSAL COUNTER
FM
8+ SW
POWER ON RESET
DO
ST/MONO
IF REQ
LW B+ SW
MW B+ SW
FM IN
IC102
LC72131
IC202
LC7073
CORR.SEL
ERROR CORRECTION
D.S.CONTROL
DATA IN
CLK IN
SERIAL/ PARALLEL CONVERT
ERROR DETECT /CORRECTION
PARALLEL/ SERIAL CONVERT
DATA OUT
DATA START
RECEIVE
SYNCHRO
SYNCHRO DETECT
OSC
SYSTEM CONTROL
CLK OUT
OSCO
OSCI
RES
CL.ED.SEL
VDD
VSS1
VSS2
VSS3
X202
CSA4.00MG


3-CD MECANISM ASS'Y (CDM-942FA)
LASER PICK UP KSM-2101ADM
PHOTO DIODE
PD F
PD E
COMMON
GND
PD A
PD B
PD C
PD D
FCL
VR1
PD
LD
FCS(+)
TRK(+)
TRK(-)
FCS(-)
LD REF
MONITOR
LD GND
LD
P401
P402
P403
SPINDLE +
SPINDLE -
SLED -
SLED +
GND
SLEDIN SW
P404
GND
POULT SW
GND
ROULT SW
TABLE M+
TABLE M-
P406
LOAD M-
LOAD M+
CLAMP SW
GND
CLOSE SW
GND
OPEN SW
IC401 KA9220
LOOP FILTER
EFM COMPARATOR
TTL TO CMOS
CMOS TO TTL
MIRR AMP & COMPARATOR
VREG & VIC
MUX
VCO 1-TIME
VCO 2-TIME
MCOM TO SERVO CONTROL AUTO SEQUENCER
CLV LPF
DEFECT AMP & COMPARATOR
FOCUS OK AMP & COMPARATOR
WINDOW COMPARATOR
TRACKING PHASE COMPENSATION
TRACKING ERROR AMP
FOCUS PHASE COMPENSATION
FOCUS ERROR AMP
APC AMP
RF AMP
5V
VR404
TRACKING GAIN
VR402
EF BALANCE
VR401
EF BIAS
VR403
FORCUS GAIN
RF & SERVO SIGNAL PROCESSOR
12V
IC403 KA9258
MOTOR SERVO DRIVER
DIGITAL SIGNAL PROCESSOR & D/A CONVERTER
IC402 KS9282
EFM PHASE DETECTOR
DPLL
CLV SERVO
CPU INTERFACE
SUBCODE SYNC DETECTOR
SUBCODE OUTPUT
SUBCODE Q REGISTER
28 BITS SHIFT REGISTER
EFM DEMODULATOR
FRAME SYNC DETECTOR PROTECTOR INSERTOR
X-TAL TIMING GENERATOR
TRACK COUNTER
DIGITAL OUTPUT
ECC
16K SRAM
SRAM ADDRESS
INTERPOLATOR
DIGITAL FILTER (8 fs)
D/A CONVERTER
X401
16.9344MHz
KA4558S
IC405B
KA4558S
IC405A
KA4558S
IC406A
KA4558S
IC406B
Q414
Q413
CD MUTE
Q411
IC404 BA6247
TABLE & LOADING MOTOR CONTROL
Q403
Q404
Q405
W101
R-CH(CD)
R-CH(TU)
S GND
L-CH(TU)
L-CH(CD)
DSP OUT
DATA IN
DATA OUT
CLK
BUSY
+5.6V
+12V
POWER DETE
VF2
VF1
VP
D GND
P201
LED GND
ETC.5V
GND
GND
VF1
VP
M.MODE
5V(MICOM)
POWER OFF
STEREO
TUNED
BUSY
P202
CLK
DATA OUT
DATA IN
RDS STR
RDS RES
RDS DAT
RDS SW
PLL CE
PLL OUT
PLL CLK
PLL IN
P204
SENSE
SCOR
RDS CLK
RESET
CD MUTE
SQCK
XRST
DATA
XLAT
CLOK
VF 2
FOK
LD ON
INNER
P203
T.MUTE
ROU-V1
ROU-V2
ROU-V3
M.CONT2
M.CONT1
M.CONT 3
CD POWER
ROU-SW1
SQSO
ROU-SW2
TUNED
RDS STR
RDS REST
RDS DATA
RDS SW
PLL CE
PLL OUT
PLL CLK
PLL IN
RDS CLK
T MUTE
STEREO
PCB NO.:A1U-368

Ⅸ. SCHEMATIC DIAGRAM

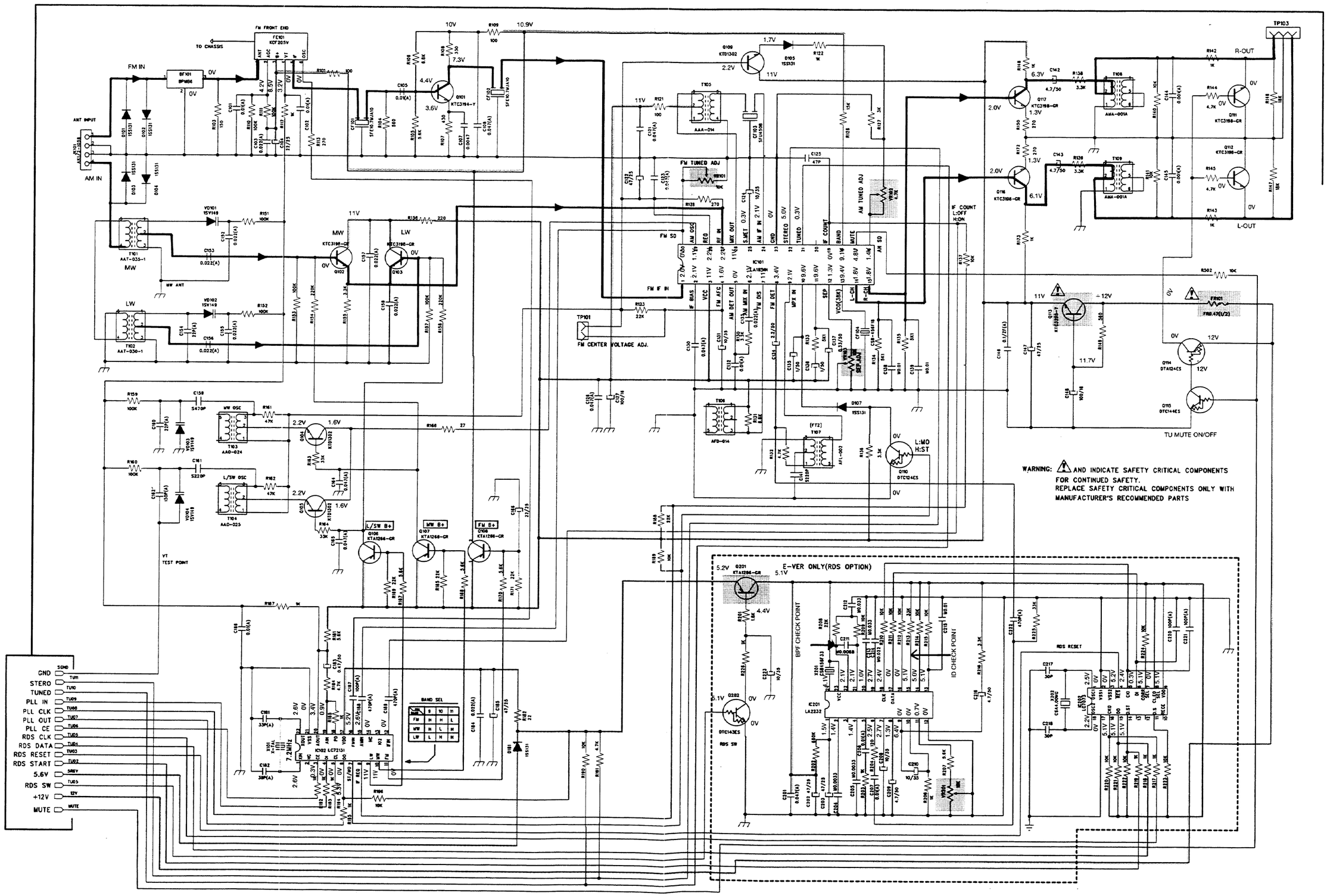
CD

TC-810 CD SCHEMATIC DIAGRAM

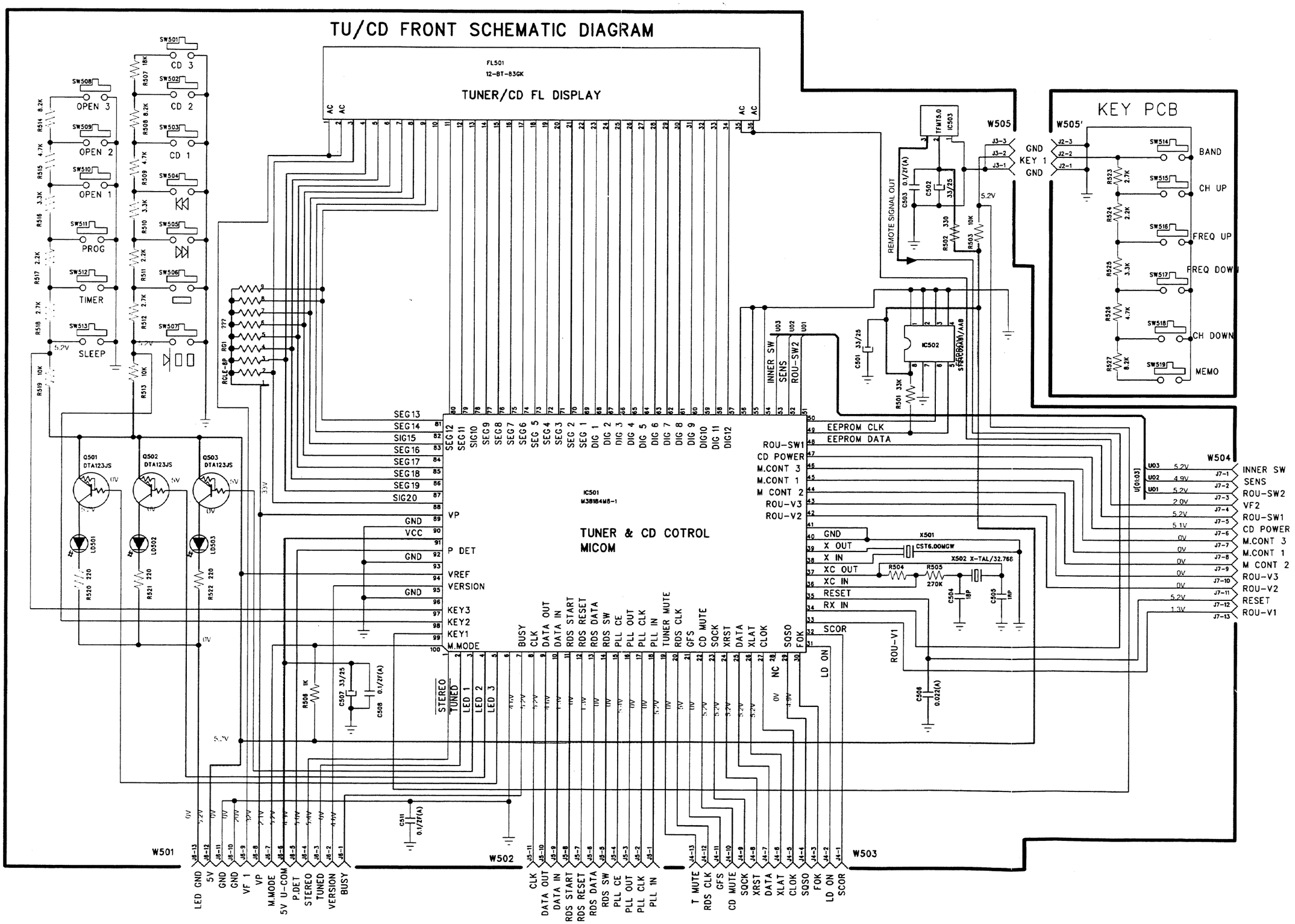


TUNER

CE-VERSION

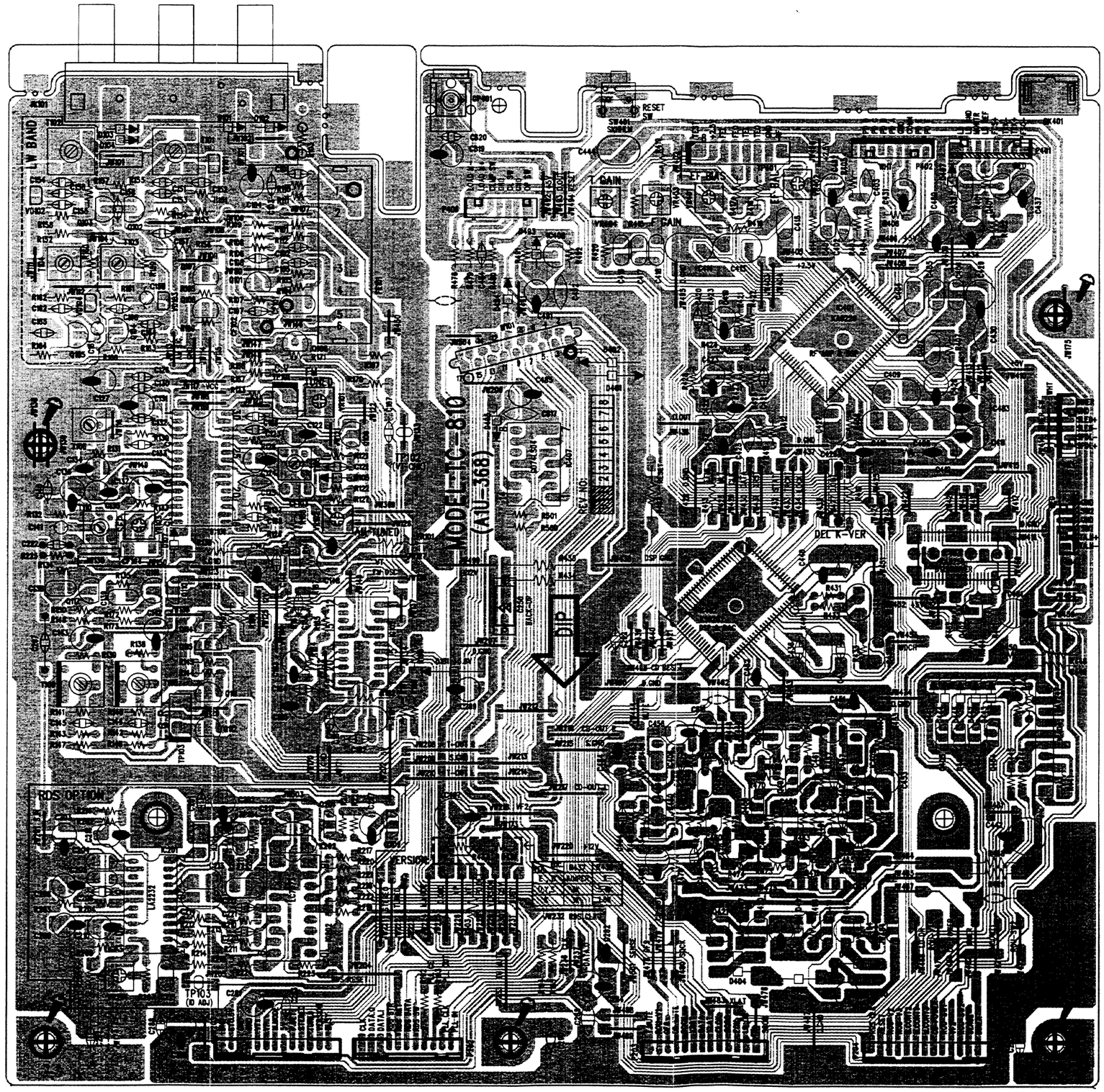


TU/CD FRONT

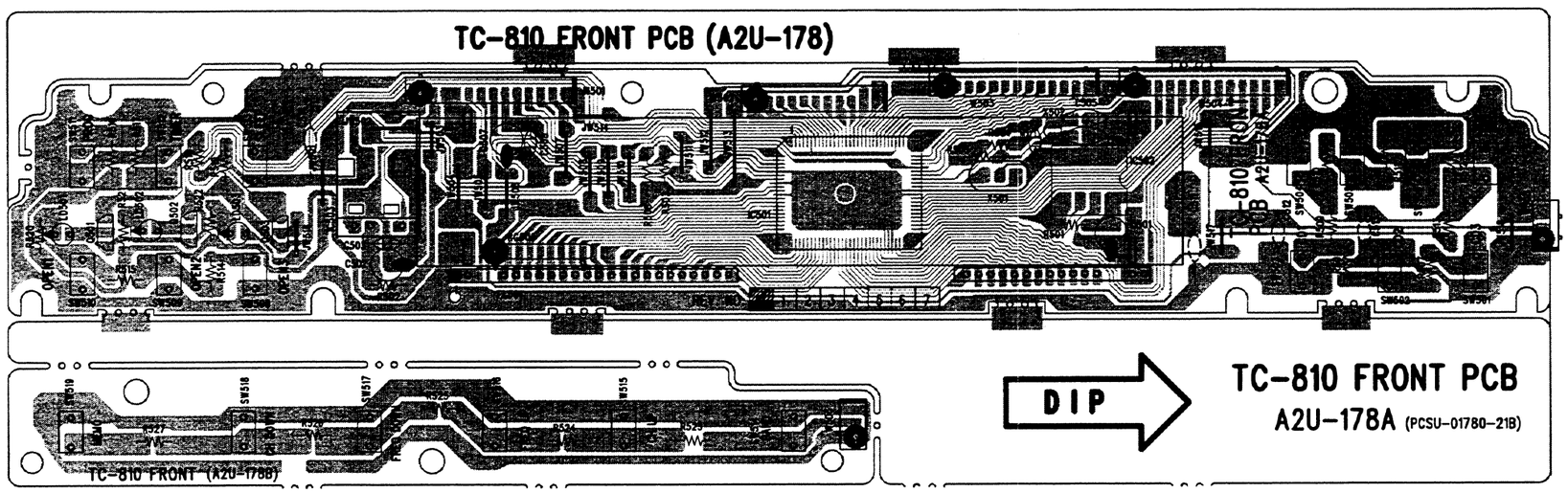

TU/CD FRONT SCHEMATIC DIAGRAM
FL501
12-BT-83GK
TUNER/CD FL DISPLAY
IC501
M38184M8-1
TUNER & CD COTROL
MICOM
KEY PCB
W505
W505'
W504
W501
W502
W503
IC502
X501
CST6.00MGW
X502 X-TAL/32.768
REMOTE SIGNAL OUT
SW501 CD 3
SW502 CD 2
SW503 CD 1
SW504
SW505
SW506
SW507
SW508 OPEN 3
SW509 OPEN 2
SW510 OPEN 1
SW511 PROG
SW512 TIMER
SW513 SLEEP
SW514 BAND
SW515 CH UP
SW516 FREQ UP
SW517 FREQ DOWN
SW518 CH DOWN
SW519 MEMO
Q501 DTA123JS
Q502 DTA123JS
Q503 DTA123JS
LD501
LD502
LD503
STEREO
TUNED
LED 1
LED 2
LED 3
INNER SW
SENS
ROU-SW2
ROU-SW1
CD POWER
M.CONT 3
M.CONT 1
M CONT 2
ROU-V3
ROU-V2
ROU-V1
EEPROM CLK
EEPROM DATA
VP
P DET
VREF
VERSION
KEY3
KEY2
KEY1
M.MODE
BUSY
CLK
DATA OUT
DATA IN
RDS START
RDS RESET
RDS DATA
RDS SW
PLL CE
PLL OUT
PLL CLK
PLL IN
TUNER MUTE
RDS CLK
GFS
CD MUTE
SQCK
XRST
DATA
XLAT
CLOK
SQSO
FOK
NC
LD ON
SCOR
GND
X OUT
X IN
XC OUT
XC IN
RESET
RX IN
5.2V
0V

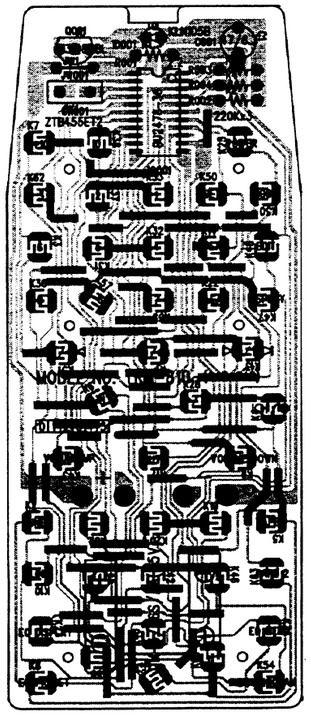
X. PCB LAYOUT

MAIN



FRONT


TC-810 FRONT PCB (A2U-178)
TC-810 FRONT (A2U-178B)
DIP
TC-810 FRONT PCB
A2U-178A (PCSU-01780-21B)



XI. INFORMATION OF ICs MI-COM

1. TUNER/CD CONTROL μ-COM

Pin No	Port Name	I/O	Active	Description
1	STEREO	I	L	Input to Detect STEREO
2	TUNED	I	L	Input to Detect TUNED
3	LED1	O	L	Terminal to display disc loading or tray OPEN/CLOSE
4	LED2	O	L	Terminal to display disc loading or tray OPEN/CLOSE
5	LED3	O	L	Terminal to display disc loading or tray OPEN/CLOSE
6	GND	—	—	GND
7	REQUEST	I	L	Input to Communicate with Deck μ-Com
8	CLK	O	—	Input to Communicate with Deck μ-Com
9	DATA OUT	O	—	Input to Communicate with Deck μ-Com
10	DATA IN	I	—	Input to Communicate with Deck μ-Com
11	RDS START	I	L	Input for RDS Control
12	RDS RESET	O	L	Reset Control of RDS Error IC
13	RDS DATA	I	—	RDS Control Data
21	GFS	I	L	Input to Detect GFS
15	PLL CE	O		PLL Control Port (Chip Enable)
18	PLL OUT	O	H	PLL Control OUT
17	PLL CLK	O	H	PLL Control CLK
16	PLL IN	I	H	PLL Data Input
19	TUNER MUTE	O	H	Tuner Mute Control ON/OFF
20	ROU-V1	O	H	Speed Control Output
42	ROU-V2	O	L	Speed Control Output
43	ROU-V3	O	L	Speed Control Output
44	MECHA CONT 2	O	—	Output to Detect Location of Tray Rotation
45	MECHA CONT 1	O	—	Output to Detect Location of Tray Rotation
46	MECHA CONT 3	O	—	Output to Detect Location of Tray Rotation
22	CD Mute	O	H	CD Mute Control
33	RDS CLK	I/O	H	RDS CLOCK IN
28	NC	O		
29	SQSO	I	H	SUB Code Read Q Data
30	FOK	I	H	Input to Detect CD SERVO FOCUS
31	LD ON	O	—	Laser Diode on/off
32	SCOR	I	—	Input for CD DSP Control
14	RDS SW	O	—	Input for RDS Control
34	REMOCON	I	L	REMOCON Signal Detection
35	RESET	I	L	CPU System Reset
36	XC IN	I	—	32,768KHz X-TAL OSC Input
37	XC OUT	O	—	32,768KHz X-TAL OSC Output
38	X IN	I	—	6,0MHz Main Clock X-TAL OSC Input
39	X OUT	O	—	6,0MHz Main Clock X-TAL OSC Output
40	GND	—	—	GND

Pin No	Port Name	I/O	Active	Description
81	SEG13	O	H	FL Display Segment Drive
82	SEG14	O	H	FL Display Segment Drive
83	SEG15	O	H	FL Display Segment Drive
84	SEG16	O	H	FL Display Segment Drive
85	SEG17	O	H	FL Display Segment Drive
86	SEG18	O	H	FL Display Segment Drive
87	SEG19	O	H	FL Display Segment Drive
88	SEG20	O	H	FL Display Segment Drive
89	VP	—	—	FLT −VP (30V)
90	PB1	—	—	GND
91	VCC	I	—	μ-Com +5V Power Source
92	P OFF DET	I	L	Power OFF Detection (4.3V)
93	GND	—	—	GND
94	VREF	I	—	Reference Voltage
95	VERSION	I	—	Version Selection [E/B/V/S/U/Y7/A/S Version]
96	GND	—	—	
97	KEY3	I	—	Key Control Input
98	KEY2	I	—	Key Control Input
99	KEY1	I	—	Key Control Input
100	M MODE	—	—	OP, CL CLAMP A/D INPUT

Pin No	Port Name	I/O	Active	Description
41	GND	—	—	GND
47	CD PO on-off	—	—	CD Power Control
52	SENS	I	L	SENS Input (SEIN, XBUSY, FOK, SEIN, GFS)
23	SQCK	I/O	H	CD DSP Control Clock
24	XRST	O	L	CD DSP Reset (Operation During System Reset)
25	DATA	O	H	CD DSP Control Data Output
26	XLAT	O	H	Latch Output(Latch at Falling Edge)
27	CLOCK CD	O	H	DSP Clock
49	EEPROM DATA	I/O	—	Data Output for EEPROM Control
50	EEPROM CLK	O	—	CLK for EEPROM Control
51	ROU SW2	I	L	Table SWI DET
48	ROU SW1	I	L	Table SWI DET
53	INNER	—	—	
54	GND	I	—	GND
55	GND	I	—	GND
56	GND	I	—	GND
57	DIG12	O	H	FL Display Grid Drive
58	DIG11	O	H	FL Display Grid Drive
59	DIG10	O	H	FL Display Grid Drive
60	DIG9	O	H	FL Display Grid Drive
61	DIG8	O	H	FL Display Grid Drive
62	DIG7	O	H	FL Display Grid Drive
63	DIG6	O	H	FL Display Grid Drive
64	DIG5	O	H	FL Display Grid Drive
65	DIG4	O	H	FL Display Grid Drive
66	DIG3	O	H	FL Display Grid Drive
67	DIG2	O	H	FL Display Grid Drive
68	DIG1	O	H	FL Display Grid Drive
69	SEG1	O	H	FL Display Segment Drive
70	SEG2	O	H	FL Display Segment Drive
71	SEG3	O	H	FL Display Segment Drive
72	SEG4	O	H	FL Display Segment Drive
73	SEG5	O	H	FL Display Segment Drive
74	SEG6	O	H	FL Display Segment Drive
75	SEG7	O	H	FL Display Segment Drive
76	SEG8	O	H	FL Display Segment Drive
77	SEG9	O	H	FL Display Segment Drive
78	SEG10	O	H	FL Display Segment Drive
79	SEG11	O	H	FL Display Segment Drive
80	SEG12	O	H	FL Display Segment Drive